

MODULARIS Litho Vario

SP

Installation and Start-up System

MODULARIS Litho Vario

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1	General information	5
	Important start-up information	5
	Applicability and regulations for regional companies	5
	MODULARIS Vario overview	6
	MODULARIS Vario	6
	Required technical documents	7
	Required tools and measurement devices	8
	Required material	8
	Protective measures	9
2	Installation	10
	Overview	10
	SIREMOBIL and monitor trolley	10
	MODULARIS Uro Plus	10
	SONOLINE	10
	Unpacking LITHOSTAR MODULARIS Vario	10
	Docking unit	12
	Combination with ARCADIS Orbic/SIREMOBIL	18
	Unit association - labeling	19
	C-arm unit isocenter cross	20
	External isocenter cross manufacturer	21
	Radiation release option	22
	MODULARIS Uro Table	22
	ECG triggering option	25
3	Start-up	28
	C-arm unit and monitor trolley	28
	LITHOSTAR MODULARIS	29
	Checking the line voltage	29
	Installing the coupling pump	30
	Filling the cooling circuit	30
	Filling the coupling circuit	31
	Checking the isocenter with X-ray	32
	Triggering shock waves	34
	Triggering shock waves with ECG (optional)	35
	Pressure measurement	35
	MODULARIS Uro (table)	36
	Ultrasound localization (if present)	37
	SONOLINE G20	38
	SONOLINE Adara	38
	SONOLINE Prima	38
	Probes	39
	Selecting the MODULARIS cross on the SONOLINE G20	41
	Ultrasound localization	41
	Selecting the MODULARIS cross on the SONOLINE Adara	42
	Ultrasound localization	42

Selecting the MODULARIS cross on the SONOLINE Prima	43
.....	43
Ultrasound localization	43
Adhesive labels for ultrasound units	45
MUT MODULARIS	46
Final work steps	47
4 Ultrasound localization retrofit	48
Cable mount on the support arm.	52
Cable holder on the cable	53
Ultrasound probes.	54
Adhesive labels for ultrasound unit	55
Adjustment and start-up	56
LithoShare with several ultrasound units	57
SONOLINE G20	57
SONOLINE Adara	58
SONOLINE Prima	59
5 Isocenter with ultrasound	60
Preparations	60
Checking the target on the SONOLINE G20	62
Checking image tilt	64
Checking the target on the Sonoline Adara.	69
Checking image tilt	70
Checking the target on the Sonoline Prima.	76
Checking image tilt	78
6 Final work steps	84
Customer and country-specific settings	84
Setting the system clock (if necessary)	84
Setting the user language (if necessary)	84
Backup and error memory.	85
Remaining work	86
7 Changes to previous version	87

Important start-up information

The device was installed, programmed, and tested at the factory (see the test certificate filed in the “technical documentation” system binder).

During start-up, you will only need to perform a few tests or measurements to ensure that none of the settings have changed.

All measurement results from measurements labeled with  must be entered in the test certificate listed in each instance.

NOTE

These measurement values as well as the values determined during start-up can be copied from the test certificate to the acceptance certificate.

Applicability and regulations for regional companies

Equivalent leakage current measurement

The equivalent leakage current must be measured where applicable under the requirements of DIN VDE 0751 Part 1.

Where DIN VDE 0751 does not apply, the regional companies should comply with the following regulations (refer to ARTD - 002.731.17, Safety-related regulations for installation and maintenance).

The national regulations apply primarily for the regional companies.

In the event that there are no existing regulations, the following provisions should be adhered to in the interest of the safety of customers, patients, employees and third parties as well as the company.

Initial measured value

The equivalent leakage current measurement was performed at the factory and the value measured was entered in test protocol 1. The measurement was made at the line voltage and line frequency indicated in test protocol 1.

If the on-site line voltage or line frequency deviates from the information indicated upon delivery, the values given are invalid. The values should be marked invalid (crossed out with the comment “invalid values” and this copy should be signed and dated).

The equivalent leakage current measurement must be repeated. According the DIN VDE 0751 Part 1, the resulting value may not exceed 1 mA.

The initial measured value must be documented.

Repeat measurements

When service or repair work is performed on the primary power supply circuit (e.g. repairs to the power-on circuit), the equivalent leakage current test must be repeated. The values measured in the subsequent test may not exceed the threshold value of 1 mA as specified in VDE 0751, Part 1. In addition, they may not exceed the initial measured value by more than 50%. If the value exceeds this threshold, the system must be repaired. The measured value must be documented.

MODULARIS Vario overview

MODULARIS Vario



Fig. 1: Vario

- Pos. 1 Shock wave head **C plus** with **140 mm** penetration depth with adapted isocenter phantom.
- Pos. 2 Therapy arm incl. head **900 mm**
- Pos. 3 Energy charger with **fast high voltage switch**
- Pos. 4 Docking system with **docking mandrel**

Required technical documents

• Start-up, release for operation	SPL1-130.815.01..
• * Dimension certificate from the PG	SPL1-130.891.01..
• MODULARIS Vario service instructions	SPL1-130.840.01..
• **C-arm unit installation instructions	n.a.
• **Monitor trolley installation instructions	n.a.
• **C-arm unit start-up instructions	n.a.
• **LITHOSTAR MODULARIS Vario adaptation	SPR2-130.814.05..
• MODULARIS Uro Plus operating instructions	SPL1-130.620.01..
• MODULARIS Vario operating instructions	SPL1-130.620.05..
• C-arm unit operating instructions	n.a.
• Service instructions for shock wave pressure and position control	SPL2-120.074.01

* Only in combination with a non-Siemens C-arm unit.

**Only in combination with Siemens C-arm units.

Required tools and measurement devices

- Standard installation tool kit
- Service PC, see intranet, service laptop for CSEs
- PC connection cable, 5m 99 00 440 RE999
- Internal line resistance meter 84 28.104 RE999
- ESD equipment
- Protective conductor tester 44 15 899 RV090
- DVM, e.g.. Fluke 187 99 94 831
- Pressure test device 30 95 408 J1008
- Adapter for C-head 98 17 347 J1008
- Bender safety tester 97 06 979 Y0526
- Spray can or varnish applicator of the color white grained MED surface no. 4146 similar to RAL grayish white 9002. 99 00 705 RE999

Required material

- Approx. 5 liters of sterile water

Protective measures

- Adhere to the protective measures described in register 1 of the system binder.
- When performing the work steps, the product-specific safety information contained in the document as well as the general safety information in ARTD, Part 2 must be observed.
- Observe ESD guidelines!



Dangerous X-ray radiation and/or dangerous electrical voltage during test and adjustment operations!

Disregarding safety precautions can result in death or serious bodily injury.

- ⇒ The following points must be observed:
- ⇒ Disconnect the power cable when working on the system.
- ⇒ Ensure compliance with the general safety requirements when working with the system under power.
- ⇒ Switch off the power prior to replacing modules or boards.
- ⇒ After all work has been completed and all covers have been installed, perform the protective conductor test according to ARTD-002.731.17...
- ⇒ The protective conductor resistance must not exceed 0.2 Ohms.
- ⇒ When performing service work on the power-on module, (replacing the power-on module or replacing the power cable), the equivalent leakage current must be measured and recorded.
- ⇒ Checks and settings that need to be performed under X-ray radiation are identified by the radiation warning symbol . When performing adjustments labeled as shown here, appropriate radiation protection measures must be taken (see ARTD, Part 2).

Overview

SIREMOBIL and monitor trolley

Refer to the valid installation instructions of the two units when installing the SIREMOBIL and the monitor trolley:

MODULARIS Uro Plus

Also refer to the document SPL1-130.033.02.. when installing the MODULARIS Uro (table with Litho opening).

SONOLINE

SONOLINE does not require any special installation instructions

Simply unpack the unit according to the "Unpacking procedure" attached to the outside and attach the accessories including the monitor.

Unpacking LITHOSTAR MODULARIS Vario

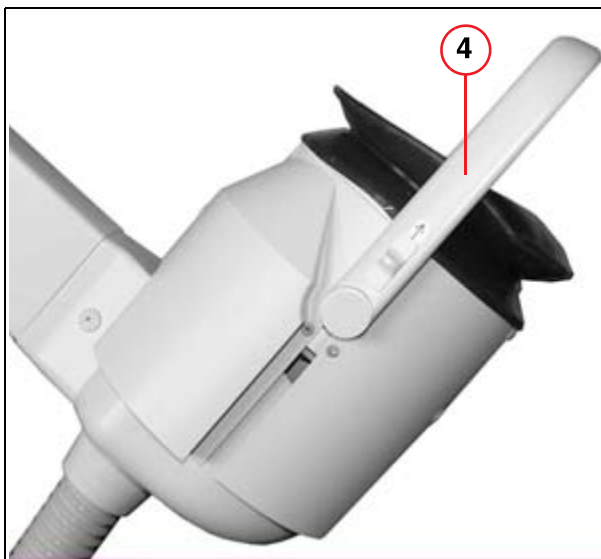


Fig. 2: Head, complete

NOTICE

Do not pull on the focus phantom (bracket (4/Fig. 2 / p. 10)), risk of damage!

⇒ **Do not use the phantom as a handle.**

- Remove the packaging above the unit.

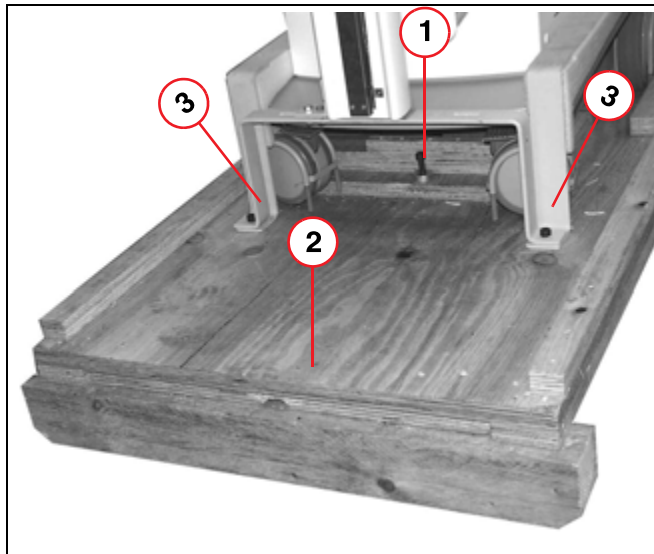


Fig. 3: Ramp 01

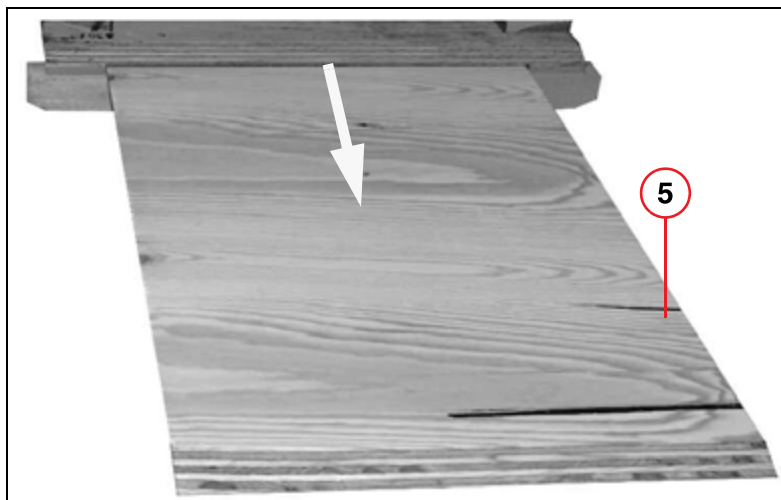


Fig. 4: Ramp 2

- Remove the transport safety screw (1/Fig. 3 / p. 11) used to secure the unit and the ramp (2/Fig. 3 / p. 11).
- Remove all transport safety brackets (3/Fig. 3 / p. 11).
- Slide the ramp (5/Fig. 4 / p. 11) out of the transport pallet from the back to the front and position it appropriately.
- Move the unit off the transport pallet and down the ramp.
- Appropriately dispose of the packaging according to the country-specific regulations.
- Adapt the power cord to the country-specific requirements, if required. If necessary, materials will have to be purchased locally. Use a hospital grade plug for the USA and for Canada.
- Secure the operating panel bracket with the screws.
- Connect the operating panel.

- Place the control panel in the mount.

Docking unit

NOTE

This chapter first describes mechanical coupling for Vario in combination with SIREMOBIL Compact. The differences with regard to the combination with SIREMOBIL ISO-C with a separate bridge are subsequently illustrated.

The procedure is the same for all C-arm units. Mechanical installation of the bridge on the front extension of the C-arm unit must always be adapted. Technical clarification must be known and in conformance with PG (SPL1-130.890.01...).

NOTE

For the sake of clarity regarding technical work on all components, the coordinates are determined in this document in Fig. (Fig. 5 / p. 13) (Vario with shock wave focus, C-arm unit with iso-center, patient table). Side designations left and right are always used for Vario and C-arm unit from the viewpoint of the operator in a forward direction.

The docking mandrel is pre-installed on the Vario centrally in relation to the longitudinal axis (1/Fig. 5 / p. 13) and can be adjusted by 30 mm in height (200 to 230 mm above the floor). The height is determined depending on the installation of the docking bridge. The docking bridge is installed on the front C-arm unit extension (2/Fig. 5 / p. 13) and (Fig. 16 / p. 18).

NOTE

The following diagrams are not shown to scale and apply for Vario with Siremobil Compact and Compact L. Pre-clarification by the local project management is required for any other C-arm unit. The procedure is then the same.

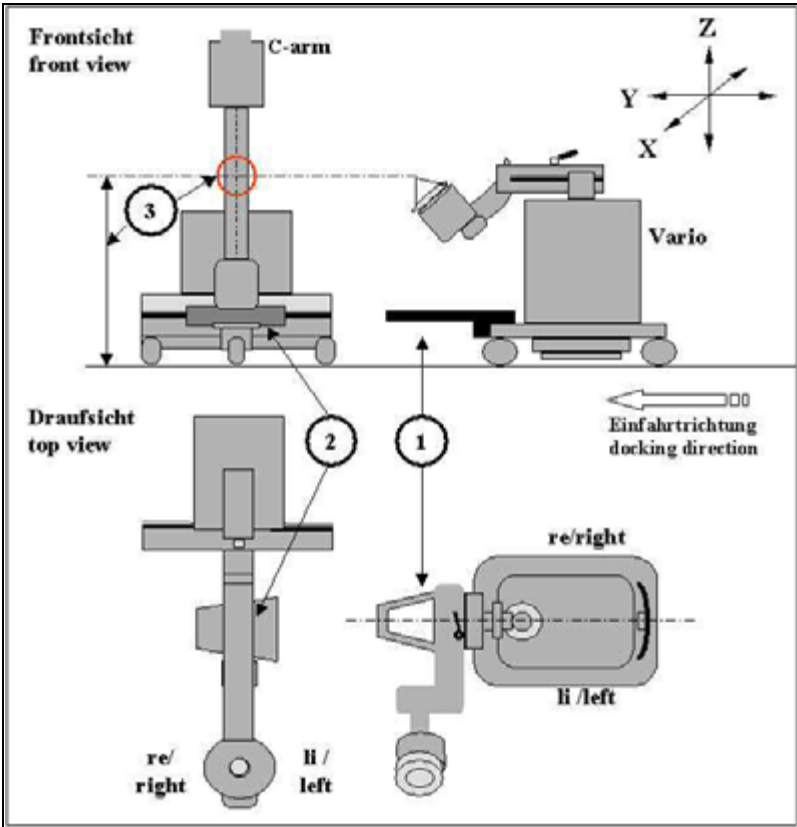


Fig. 5: Docking unit

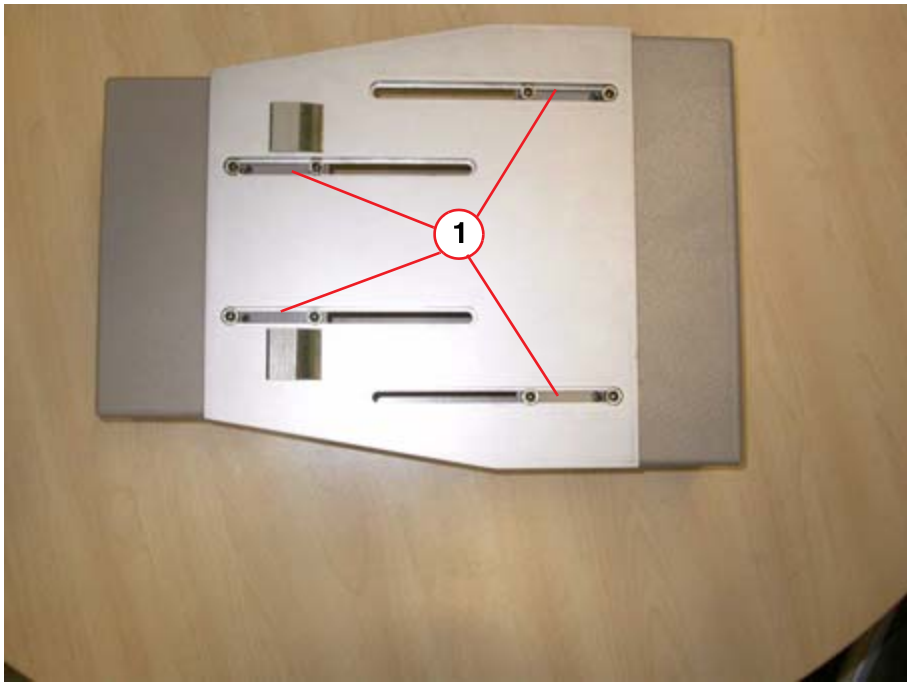


Fig. 6: Docking securing_4

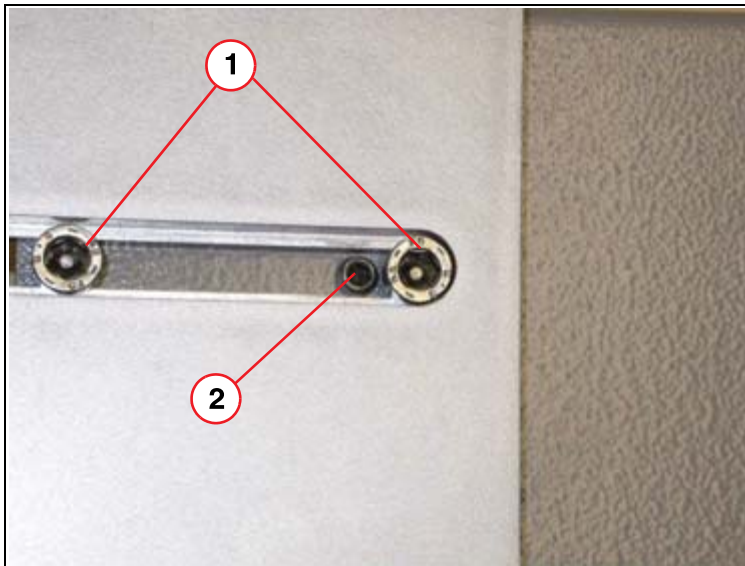


Fig. 7: Docking securing_2

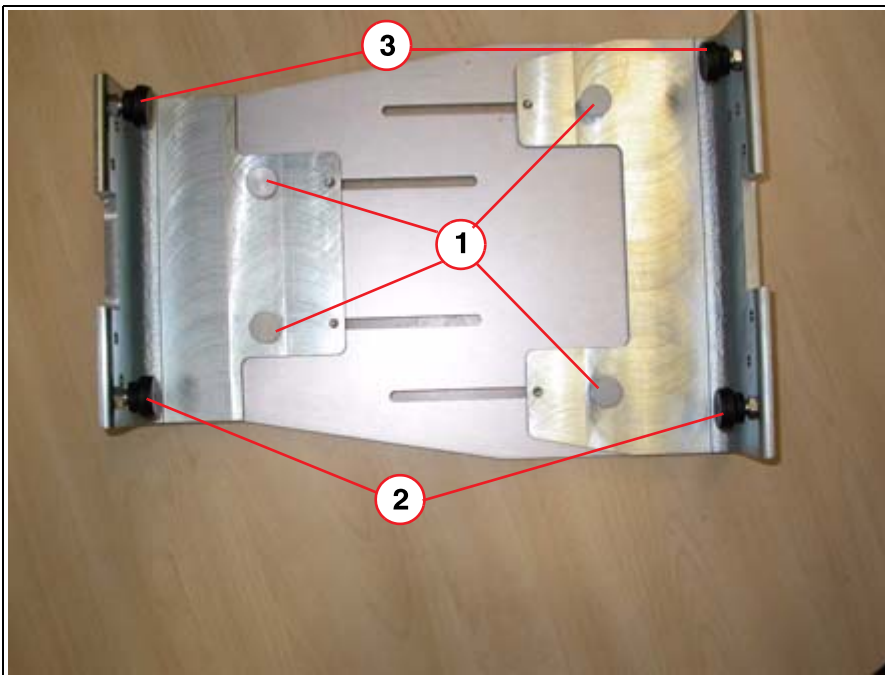


Fig. 8: Docking securing_3

- Prepare the Vario to the left of the C-arm on a level floor (fix C-arm)
- Set the C-arm vertically to approx. 1070 mm in the center ((3/Fig. 5 / p. 13)_ Z direction)
- Remove the top part of the docking bridge.
- Unscrew the docking bridge (1/Fig. 6 / p. 13) or detailed view (1/Fig. 7 / p. 14) and pull the docking bridge apart so that the complete adjustment range is available.
- Place the bottom part of the docking bridge on the C-arm extension, min. 140 mm in the X direction (1/Fig. 9 / p. 15) and approximately centered.
- The docking bridge can be positioned horizontally via Allen screws (2/Fig. 7 / p. 14). If the adjustment range is insufficient, the preinstalled Allen screws (1/2/3/Fig. 8 / p. 14) can be replaced with the included longer screws.

- Tighten the eight fastening screws (1/Fig. 6 / p. 13) and (Fig. 7 / p. 14).
- Set the Vario docking mandrel in the horizontal position (1/Fig. 5 / p. 13).
- Set the Vario arm to be horizontal (gel or therapy position)
- When the Vario moves in, the mandrel must move over the lower part of the sleeve - check heights from the floor (2/Fig. 10 / p. 15). Adjusting screws for adjusting the height of the mandrel, see (1/Fig. 10 / p. 15). Use a level for this adjustment.

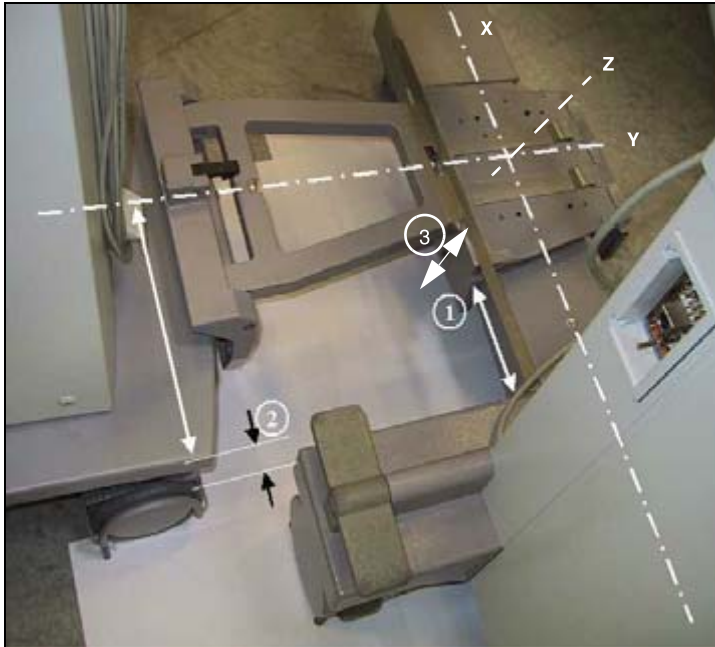


Fig. 9: Docking unit 2

- Move Vario in with a distance of at least 90 mm (2/Fig. 9 / p. 15).
- Align the lower part of the docking bridge to the mandrel in X direction (1/Fig. 9 / p. 15).
- Secure the bottom part with the Allen screw (1/Fig. 11 / p. 16).
- Position the top part of the docking bridge and secure it (1/Fig. 12 / p. 16).
- Test the inward movement and locking of the Vario. The latch must lock securely. Correction is performed using the black Allen screw in the latch (2/Fig. 12 / p. 16).

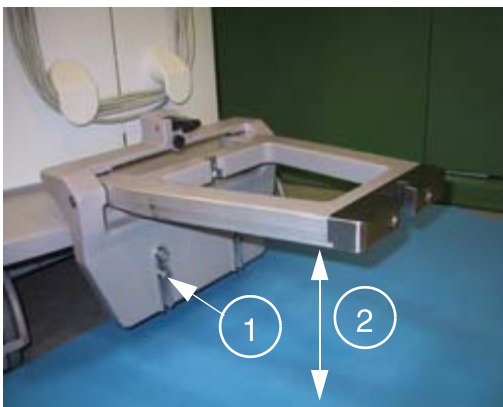


Fig. 10: View 1

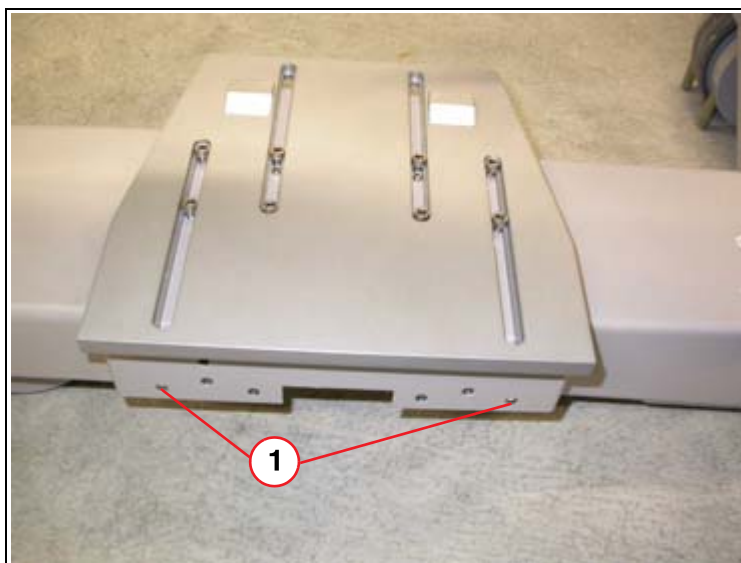


Fig. 11: Lower part

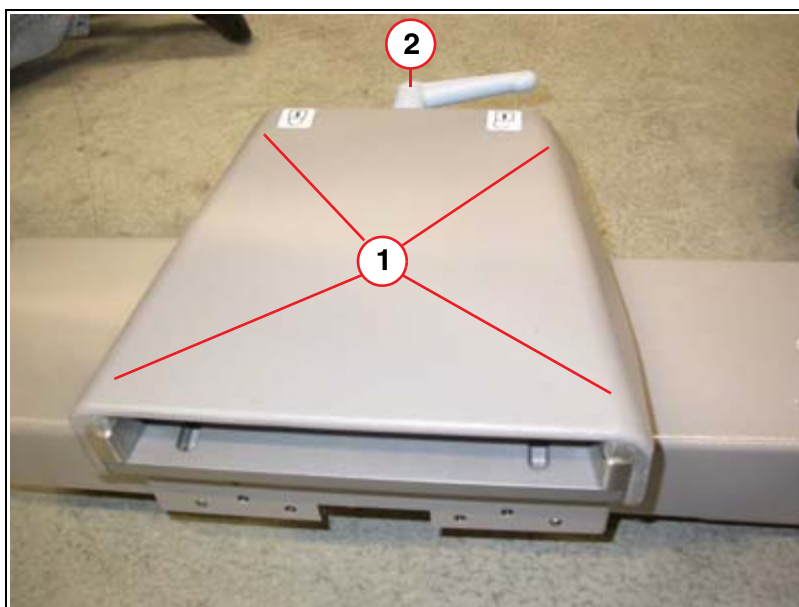


Fig. 12: Upper part

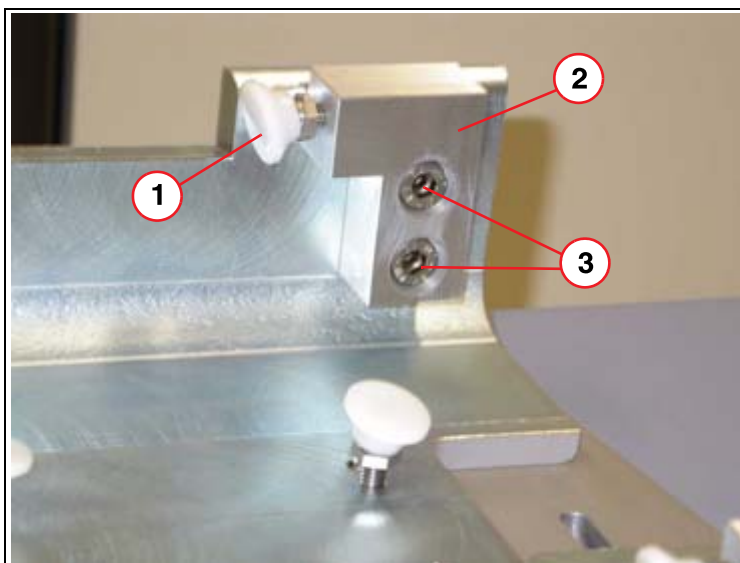


Fig. 13: Block

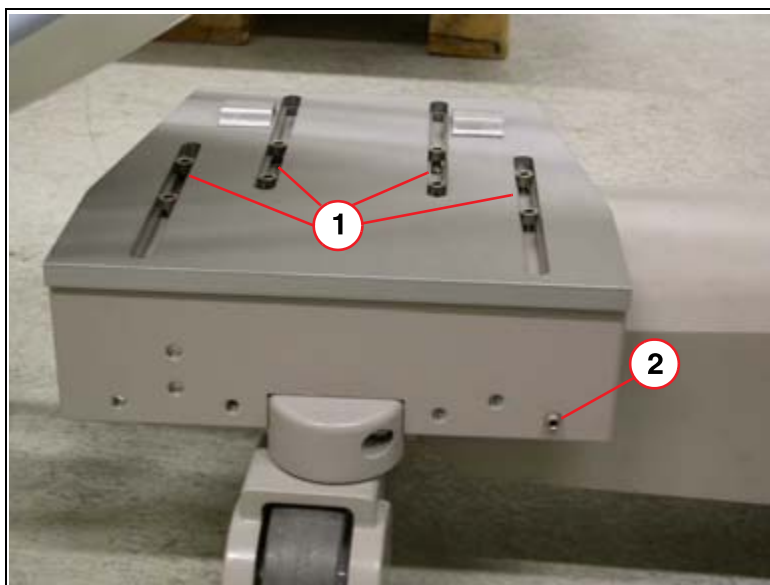


Fig. 14: Block_

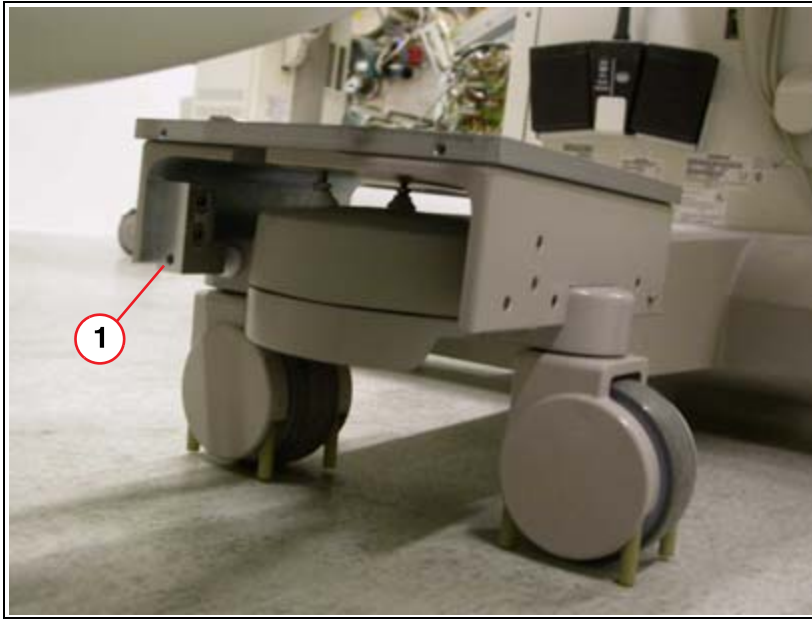


Fig. 15: Block_mounted

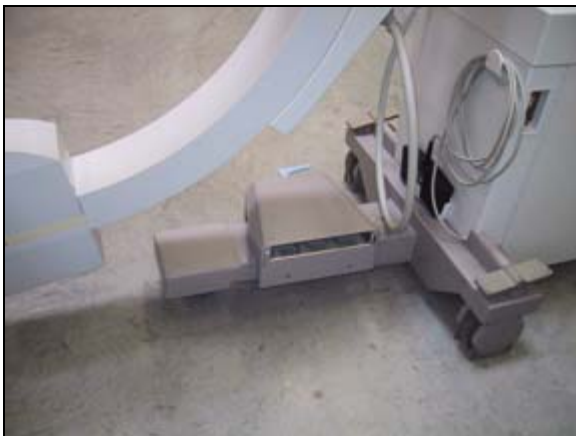


Fig. 16: View 3

Combination with ARCADIS Orbic/SIREMOBIL

The bridge is to be modified for ARCADIS Orbic and SIREMOBIL ISO-C according to (Fig. 13 / p. 17).

- Remove both clamping screws (3/Fig. 8 / p. 14).
- Screw the clamping screws from the enclosed material into the fastening block (1 und 2/Fig. 13 / p. 17).
- Attach these blocks to the bridge with 2 screws (3/Fig. 13 / p. 17).
- Position the bridge according to (Fig. 14 / p. 17).
- Horizontally position the bridge via the clamping screw (1/Fig. 14 / p. 17) (or see (2/Fig. 7 / p. 14) for more detail).
- Secure the bridge with the clamping screw (2/Fig. 14 / p. 17) and (1/Fig. 15 / p. 18).

- Position the top part of the docking bridge and secure it (1/Fig. 12 / p. 16).
- Test the inward movement and locking of the Vario. The latch must lock securely. Correction is performed using the black Allen screw in the latch (2/Fig. 12 / p. 16).

Unit association - labeling

Label the supplied sticker with a permanent marker as shown in Figure: (Fig. 17 / p. 19). All combinable C-arm units must be listed on the Vario. The combinable Vario must be labeled on the C-arm unit. Attach label 1 (Figure (1/Fig. 17 / p. 19)) to the Vario (Figure: (1/Fig. 18 / p. 20)). Attach label 2 (Figure: (Fig. 17 / p. 19)) to the C-arm unit in one of the indicated areas (Figure: (2/Fig. 18 / p. 20)) so that no manufacturer information is covered. Cover both labels with a transparent film.

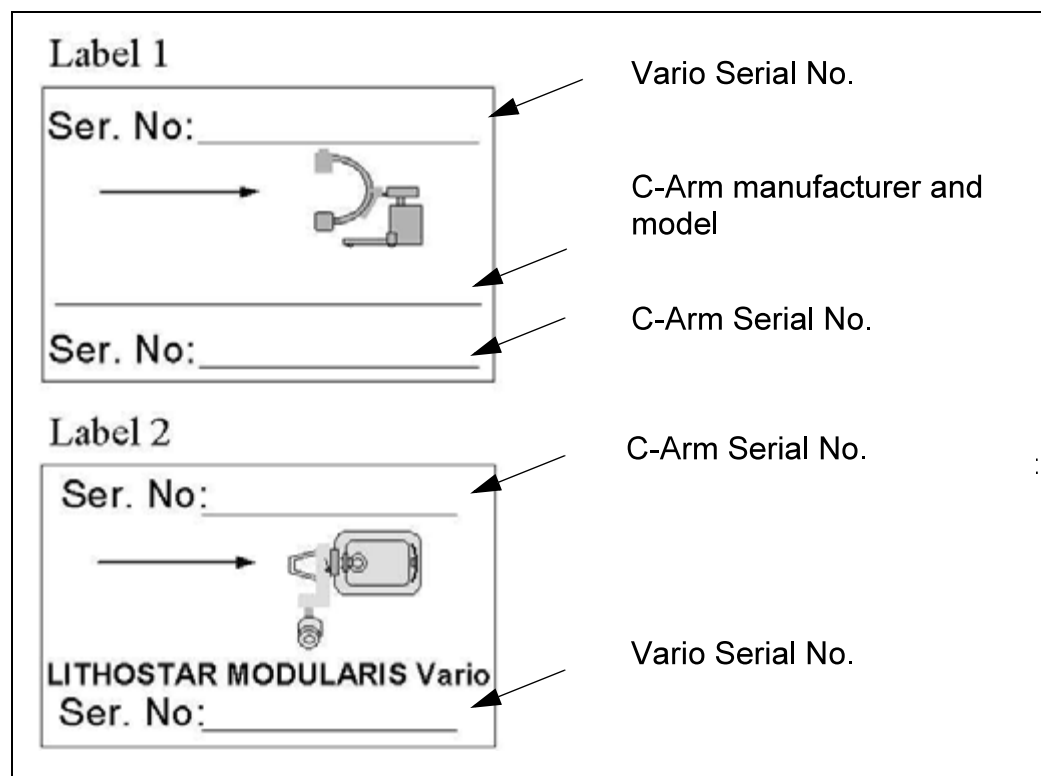


Fig. 17: Label 1

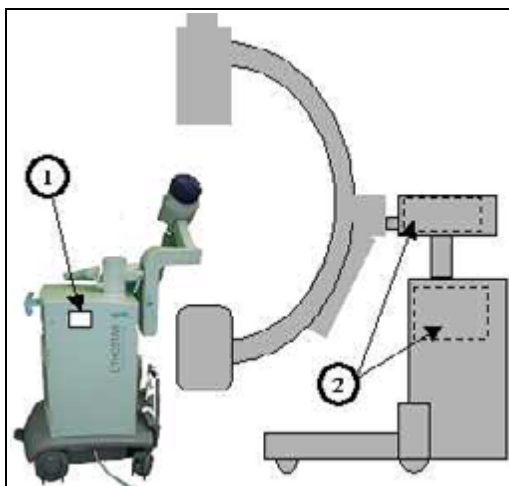


Fig. 18: Label 2

C-arm unit isocenter cross

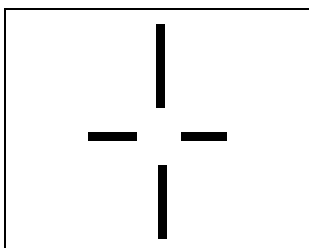


Fig. 19: Cross



Fig. 20: I.I. 1

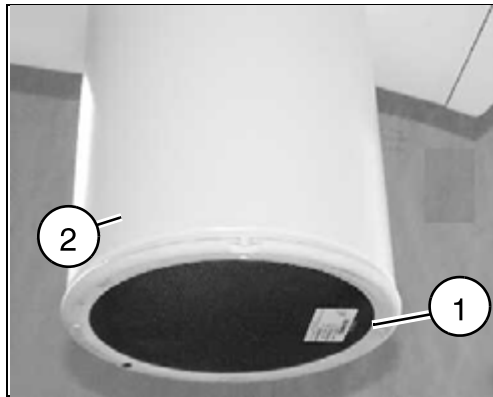


Fig. 21: I.I. 2

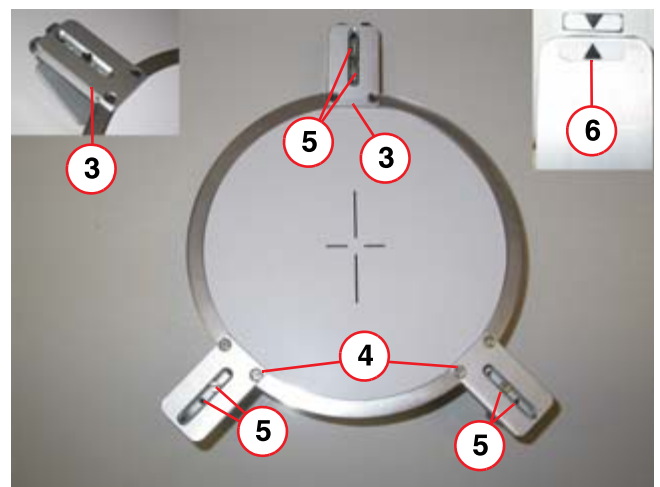


Fig. 22: 3 cm I.I.

Attachment of the isocenter cross to the SIREMOBIL Compact and Compact L

- Remove the front screw on the I.I. and replace it with the M4 x 16 screw included in the shipment (1/Fig. 22 / p. 21).
- The crosshairs must be position in the center of the mounting ring. Check this with a tape measure and correct it if necessary.
- Snap the isocenter cross onto the I.I.
- Attach the arrows (Figure: (Fig. 20 / p. 20)) (indicating the centering stud).
- Place the supplied "serial number" labels on the isocenter cross (1/Fig. 22 / p. 21) and the I.I. (2/Fig. 22 / p. 21).

External isocenter cross manufacturer

Depending on the I.I. diameter, select one of the three delivered crosshairs and attach the corresponding retaining brackets.

- Install the movable bracket (3/Fig. 22 / p. 21) in the crosshair extension.
- Install the two fixed brackets accordingly (4/Fig. 22 / p. 21).

- To allow for later adjustment, tighten the adjusting screw (5/Fig. 22 / p. 21) only loosely. Use the center threaded hole first.
- Mount the grid and position it approximately in the middle.
- Attach the C-arm unit and the Litho module.
- Swing up the adjustment phantom on the shock wave head.
- Center the grid with the adjustment phantom under fluoroscopy by moving the retaining brackets.
- Install the second screw in the retaining brackets and check again that the grid is centered.
- Adhere the arrows (6/Fig. 22 / p. 21) to the I.I.

Radiation release option

NOTE

The radiation release option of the Lithostar operating panel is released only for Siremobil Compact and Compact L.

This option is performed according to the instructions SPR2-130.814.05... "Installation Instructions for LITHOSTAR Modularis Vario". A paper version of this document is part of conversion kit number 71 40 952.

MODULARIS Uro Table

Installing the positioning yoke

- The positioning yoke is packed separately in the shipment (part no. 81 25 333).
- Attach the yoke to the table with the two screws as shown in ((1/Fig. 23 / p. 23)).
- The positioning yoke must be adjusted so that its height corresponds to that of the docking bridge ((1/Fig. 24 / p. 23)). Adjustment can be performed by turning the two rubber stoppers ((2/Fig. 24 / p. 23)).
- The rubber stoppers must be secured by the screw ((1/Fig. 25 / p. 24)).
- No mechanical connection is created when operating the system for therapeutic purposes. The C-arm is simply docked in the yoke.
- The yoke must be collapsed to the table base and rest completely on it when in the table park position.

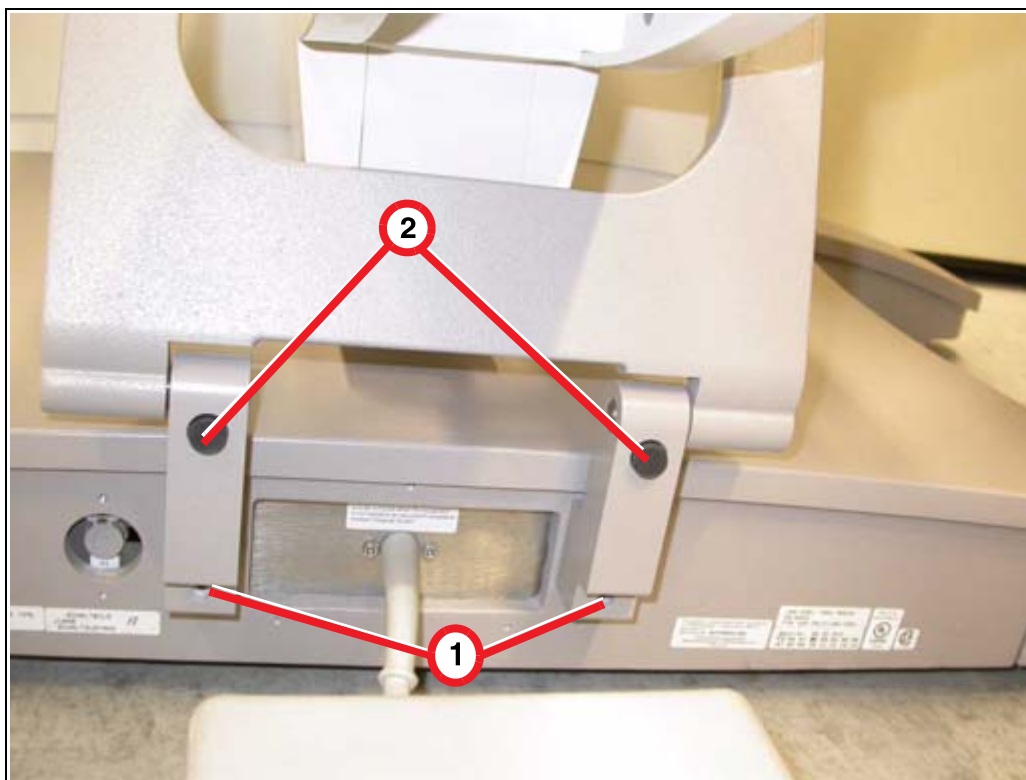


Fig. 23: Positioning_yoke_1

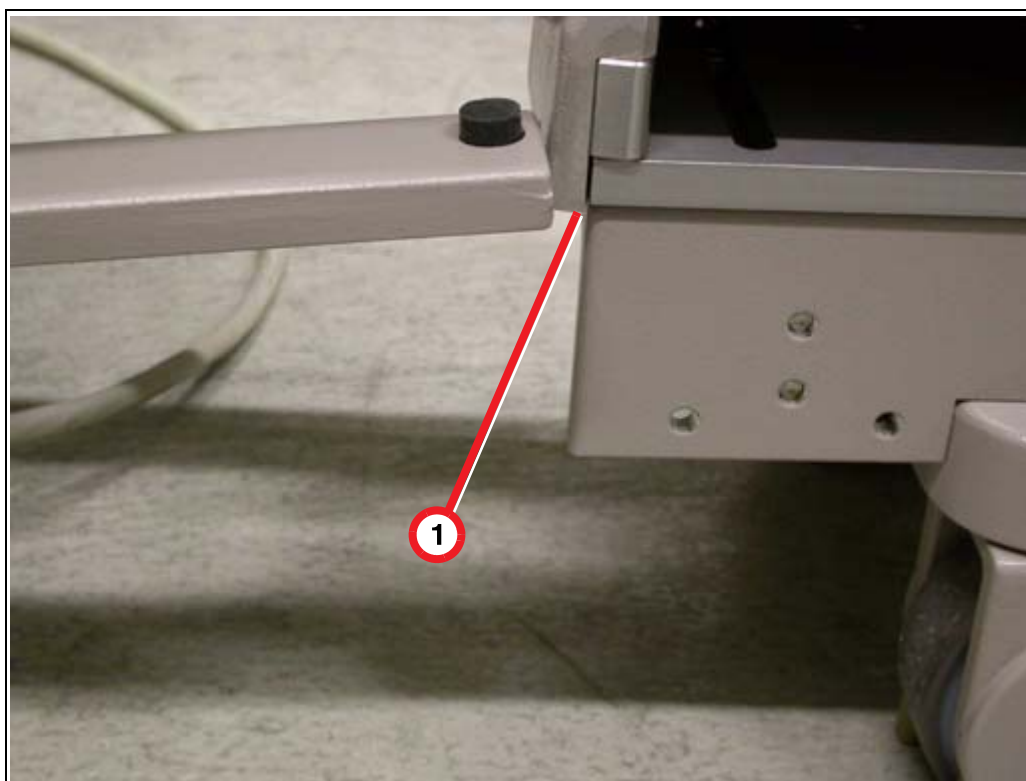


Fig. 24: Positioning_yoke_2

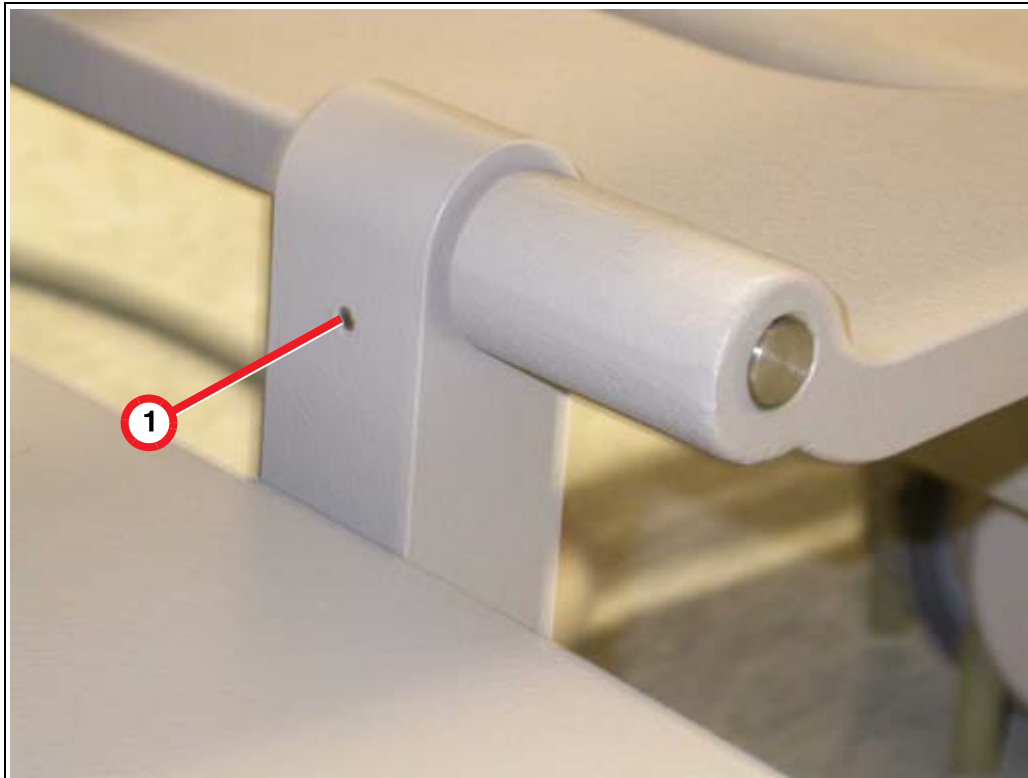


Fig. 25: Securing screw

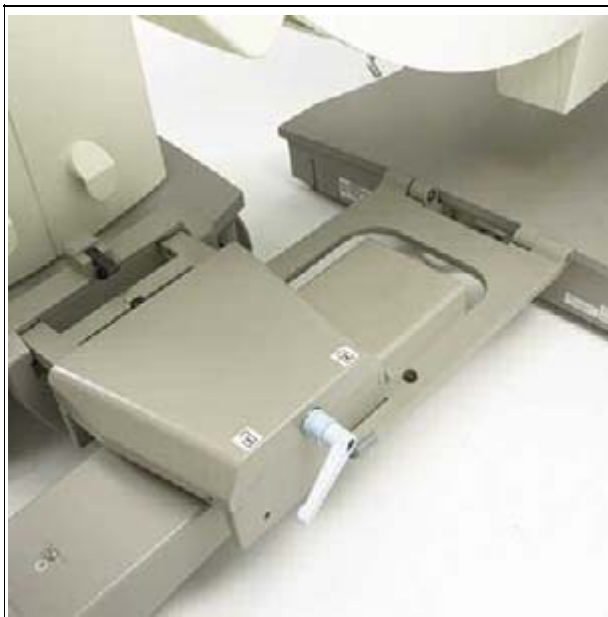


Fig. 26: Positioning yoke

ECG triggering option

Mounting the docking station

- Unscrew the rectangular plate (Fig. 27 / p. 26) from the docking station of the ECG monitor. It is no longer required.
- Screw the docking station bracket from the conversion kit onto the round plate so that the longitudinal grooves are visible from below (Fig. 28 / p. 26).
- Remove the round cap from the column of the system trolley. It is no longer required.
- Remove the cover from the system trolley.
- Disconnect the cables from the mount (7/Fig. 30 / p. 27).
- Plug the inlet connector for a non-heating apparatus (power cable) into the connector strip (6/Fig. 30 / p. 27).
- Push the trigger cable from the D3.X70 board (beside the service switch) starting with the jack plug, from beneath, through the column and lead it out, parallel to the wires, together with the power cable.
- Plug the inlet connector for a non-heating apparatus into the power supply unit of the ECG monitor.
- Attach the power supply unit of the ECG monitor in the system cart to the support (8/Fig. 30 / p. 27) via cable clamps.
- Push the 24 V cable of the power unit through the column from below and route it in the same way as the trigger cable.
- Using a cable clamp for each from the conversion kit, secure both cables to the mounting plate so that a length of approximately 35 cm is available outside the column.
- Screw the plate firmly onto the column so that the cables emerge from the corrugated hose opposite each other, as shown in (Fig. 29 / p. 27).
- Connect the service PC.
- Select the ECG function according to the service instructions.



Fig. 27: Attachment 1



Fig. 28: Attachment 2



Fig. 29: Attachment 3

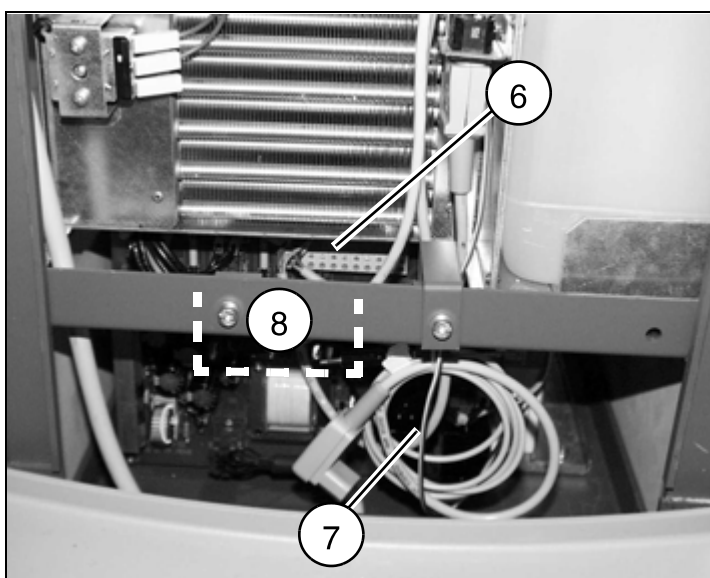


Fig. 30: Attachment 4

C-arm unit and monitor trolley

Use the documentation of the system type for the start-up.

If it is a "non-Siemens system", the following points must be fulfilled:



- Perfect functioning must have already been ensured by the responsible start-up engineer.
- The release from the planning guide must be available from Siemens project management. Implementation of the combination by the documentation with the dimension protocol from planning guide SPL1-130.891.01...

NOTICE

Liability for the complete therapy system.

⇒ **If no documents covering the above points are available, the combination with MODULARIS Vario may not be implemented!**

In the case of the SIREMOBIL Compact and ARCADIS Varic, radiation can be triggered from the Litho module control panel. Use instructions SPR2-130.814.05.. and tool kit 7140952 (depending on the SIREMOBIL serial number) for this purpose.

LITHOSTAR MODULARIS

Checking the line voltage



- Measure the line voltage at the power outlet.
- Compare the measured line voltage to the value in the test protocol. The voltage can be changed. The jumpers are located on the transformer in the LITHOSTAR MODULARIS Vario.

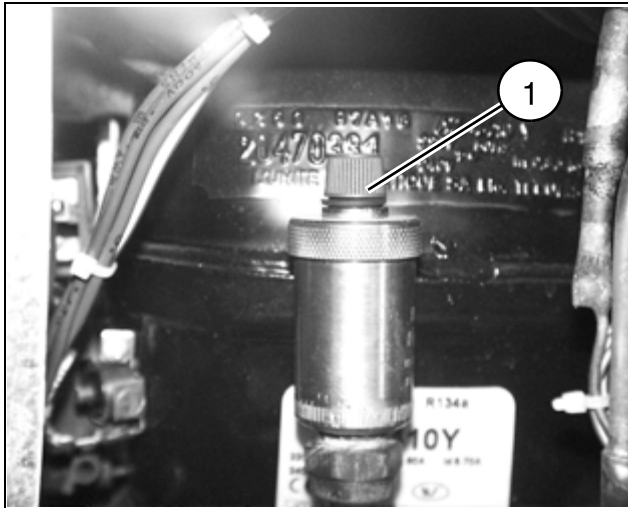


Fig. 31: Air bleeder valve

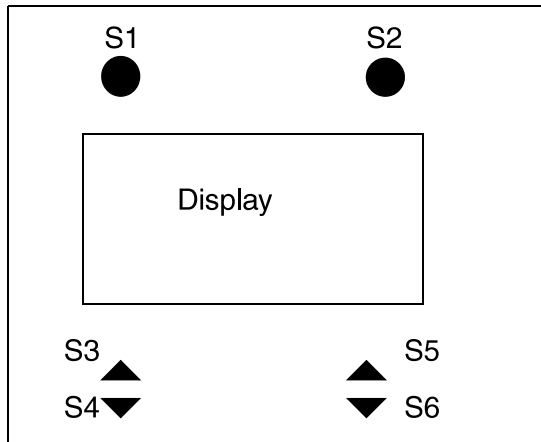


Fig. 32: Control panel

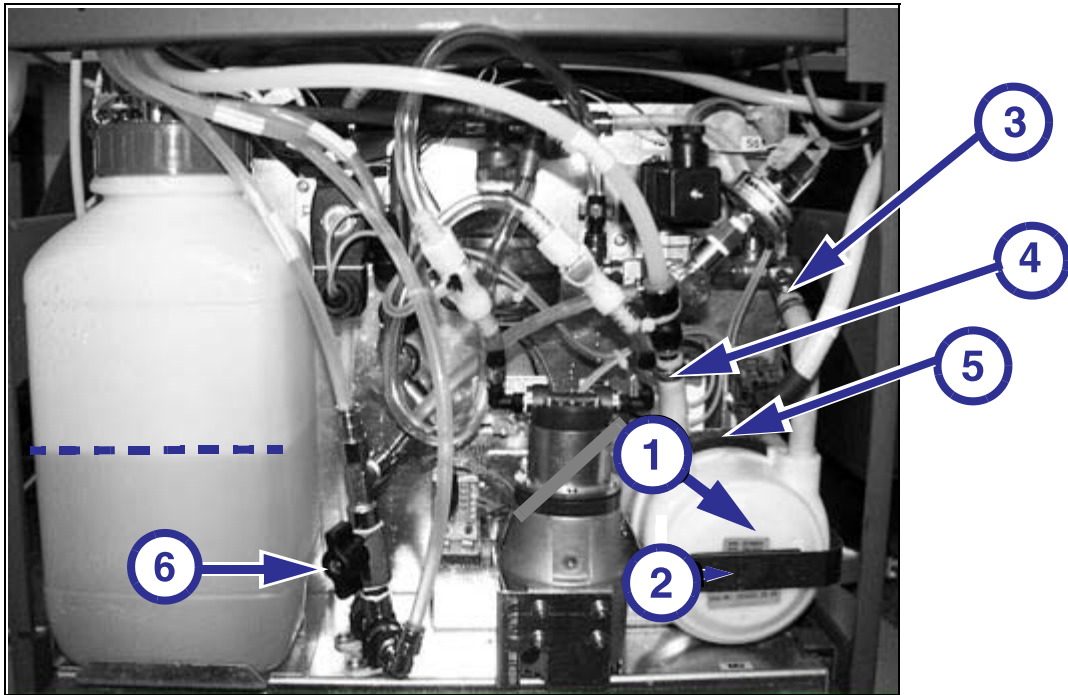


Fig. 33: Cooling unit_

Installing the coupling pump

- Remove the system covers.
- The coupling pump is located under the water reserve tank in front of the power supply board.
- Place the hose pump head on the drive axle (1/Fig. 33 / p. 30).
- Press up or down on the black latch (5/Fig. 33 / p. 30).
- Attach the safety bracket (2/Fig. 33 / p. 30).
- Establish the hose connections (3/4/Fig. 33 / p. 30).

Filling the cooling circuit

- Remove the water reservoir tank and fill it with distilled water.
- Reinstall the water reservoir tank.
- Switch the system on.
- Move the support arm into the horizontal position.
- Open the air bleeder valve (cap) in the cooling unit two turns (1/Fig. 31 / p. 29) (the valve must always be open).
- Set service switch S2 on board D3 to position 2 (service on).
- Open valve Y8 (6/Fig. 33 / p. 30), i.e., control lever Y8 horizontal = closed, vertical = open.
- Select "Service" - "cooling unit" on the control panel.

- Press the appropriate "fill" button (S5/Fig. 32 / p. 29) on the control panel until the water emerges bubble-free from the return hose in the water reservoir tank (hose pump M1 runs until V188 lights up on the D3 board).
- Open valve Y8 (6/Fig. 33 / p. 30), i.e., control lever Y8 horizontal = closed, vertical = open.

Filling the coupling circuit

- Select "Service" - "coupling circuit" on the control panel.
- Activate the "fill" switch (S5/Fig. 32 / p. 29) on the control panel until the coupling bellows expands.
- Set the service switch S2 on board D3 to position 1 (service off).
- Select and activate "rinse" on the control panel. This will automatically end the filling process.
 - If you still see air bubbles in the coupling bellows, start the fill cycle again.
- Set the service switch S2 on board D3 to position 2 (service on).
- First select "service" and then "coupling circuit" on the control panel.
- Activate the "empty" switch (S6/Fig. 32 / p. 29) on the control panel until the coupling bellows is resting against the lens.
- Switch the system off.
- Fill the water reservoir tank with distilled water.
- Set the service switch S2 on board D3 to position 1 (service off).
- Switch the system on. The "rinse" cycle will be automatically activated and the coupling bellows will fill.
- Switch the system off.
- Remove the shock head cover and test all sealed transitions for leaks. Visual inspection: Supplies and returns, pressure and temperature sensor, coupling bellows.
- Reattach the system covers.

Checking the isocenter with X-ray

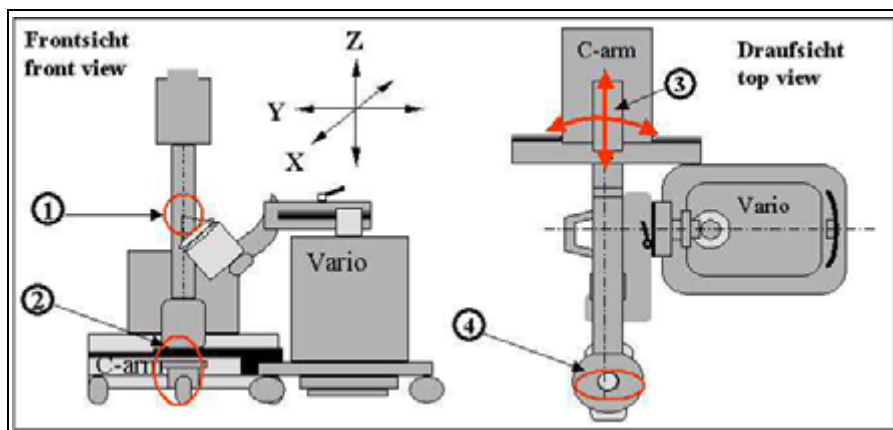


Fig. 34: Iso-center 01

NOTICE

If the MODULARIS Vario is adjusted for "LithoShare", the isocenter must be checked with each C-arm unit.

⇒ Perform adjustment according to service instructions SPL1-130.840.01..

- Before the isocenter is checked or adjusted, the following settings are required on the C-arm unit:
 1. Set camera rotation to 0°.
 2. Deselect vertical and horizontal image reversal
 3. Set the unit in a mechanically stationary manner on a level floor (roller brakes operated)
 4. Fix the C-arm to 0° vertically at the height of 1070 (+/- 20mm) (1/Fig. 34 / p. 32)
 5. Activate the "last image hold function" (LIH=ON)
- Bring the shock wave head into therapy position on the MODULARIS Vario
- Dock the Vario to the C-arm unit (2/Fig. 34 / p. 32)
- Place the isocenter phantom on the shock wave head in the test position (Fig. 36 / p. 33)

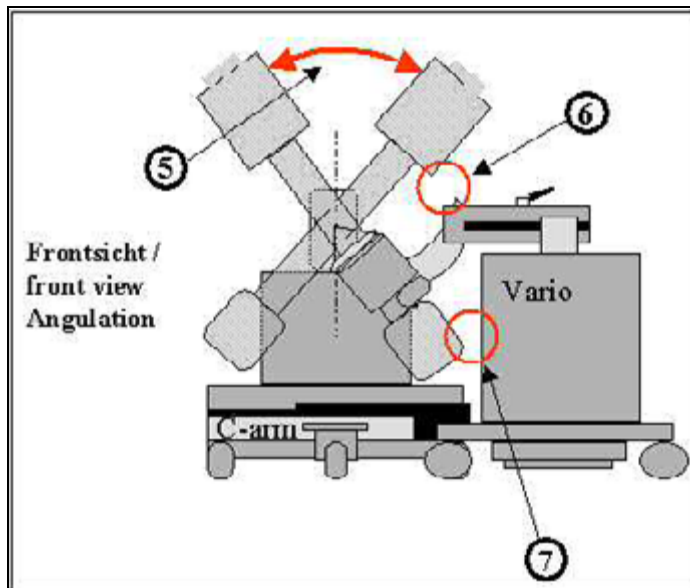


Fig. 35: Iso-center 02



Fig. 36: Phantom

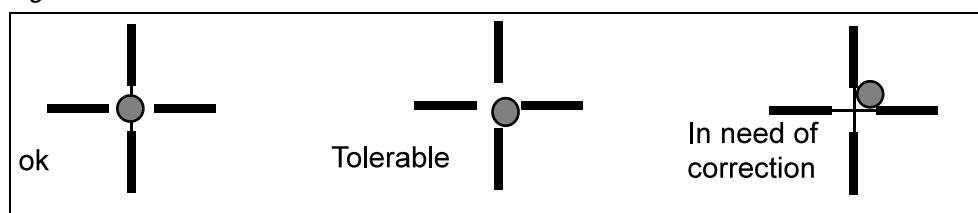


Fig. 37: Position of the ball

In the following test, the phantom ball must always cover the intersection point of the localization cross in every X, Y and Z axis setting (Fig. 37 / p. 33).

Adjust the X direction via the horizontal forward and reverse movement of the C-arm (3/Fig. 34 / p. 32)

Adjust the Y direction via the horizontal pivot movement of the C-arm (3/Fig. 34 / p. 32)

Adjust the Z direction using the +/- 15° min., angulation movement (5/Fig. 35 / p. 33) while observing the collision zone (6/Fig. 35 / p. 33).

If the center is not reached exactly with the C-arm movement, the shock wave head must be adjusted accordingly per service instructions SPL1-130.840.01...



- Switch on fluoroscopy and check the isocenter at 0°, +15° and -15°.

For the permissible position of the ball, see (Fig. 37 / p. 33). The position of the the ball at +15° und -15° does not have to be identical, but must be within the tolerance.

- If the centering needs to be readjusted, correct it in accordance with the "Isocenter with X-ray" chapter LITHOSTAR MODULARIS service instructions.
- Fold the isocenter phantom back onto the shock wave head (Fig. 35 / p. 33).

NOTE

If all work steps have been successfully completed up to this point, fill out the fax for release of operation and send it (release for operation, SPL1-130.815.01...). Release can then be available by the time of customer transfer.

This individual release is always required, regardless of the C-arm manufacturer (including Siemens units).

Triggering shock waves

- Pump water into the coupling bellows.
- Apply some coupling gel to the coupling bellows to protect them (the coupling gel will prevent the coupling bellows from being significantly damaged when shock waves are triggered without a patient).
- Increase the shock wave energy in steps from the lowest energy level to the highest energy level and release additional shock waves at every energy level.

Triggering shock waves with ECG (optional)

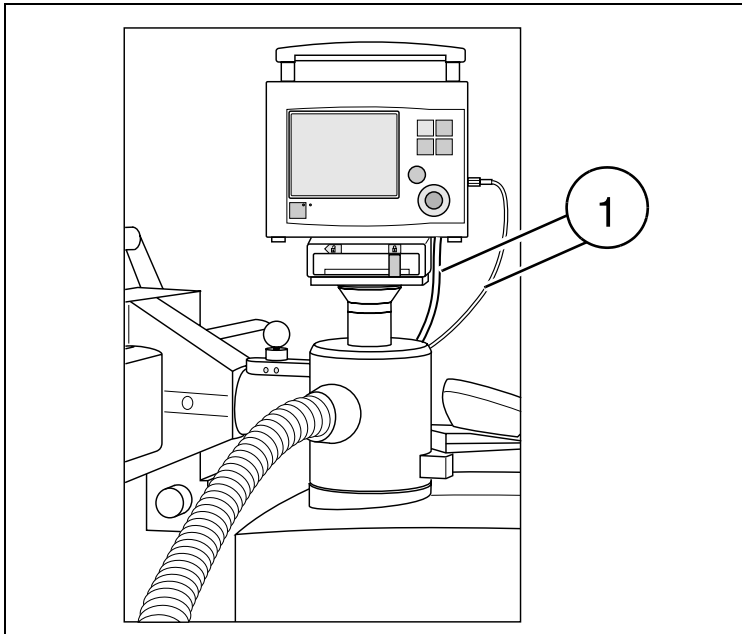


Fig. 38: Shock wave triggering with ECG

- Attach the ECG monitor to the docking station in accordance with the operating instructions (Fig. 38 / p. 35).
- Connect the two cables (1/ Fig. 38 / p. 35) to the ECG monitor.
- Connect the ECG electrodes to a test subject or connect the ECG simulator to the ECG device.
- Select ECG triggering on the LITHOSTAR MODULARIS control panel.
- Spread some coupling gel on the coupling bellows to protect it.
- Increase the shock wave energy in steps from the lowest energy level to the highest energy level and release additional shock waves at every energy level.

Pressure measurement

A pressure measurement must be performed after commissioning.

The following document is necessary for pressure measurement:

Shock wave pressure and position control: SPL2-120.074.01

MODULARIS Uro (table)

The following documents are required to start up the MODULARIS Uro:

Start up the table according to the instructions SPL1-130.033.02..

NOTICE

The table may only be moved using the motor if it is in the working position.

⇒ **This means that the foot lever is down (see the MODULARIS Uro operating instructions).**

- Connect the cables between the LITHOSTAR MODULARIS and MODULARIS Uro.
- Move the table into Litho mode and check the table movements with the LITHOSTAR MODULARIS control panel. The following motorized movements are possible from the LITHOSTAR MODULARIS control panel:

Table movement in the Litho mode (green LED on the table control panel goes on)

e.g. key for longitudinal movement pressed.

Table movement approx. 2-3 mm - stops for approx. 2-3 seconds - and then continues movement without pausing.

Ultrasound localization (if present)

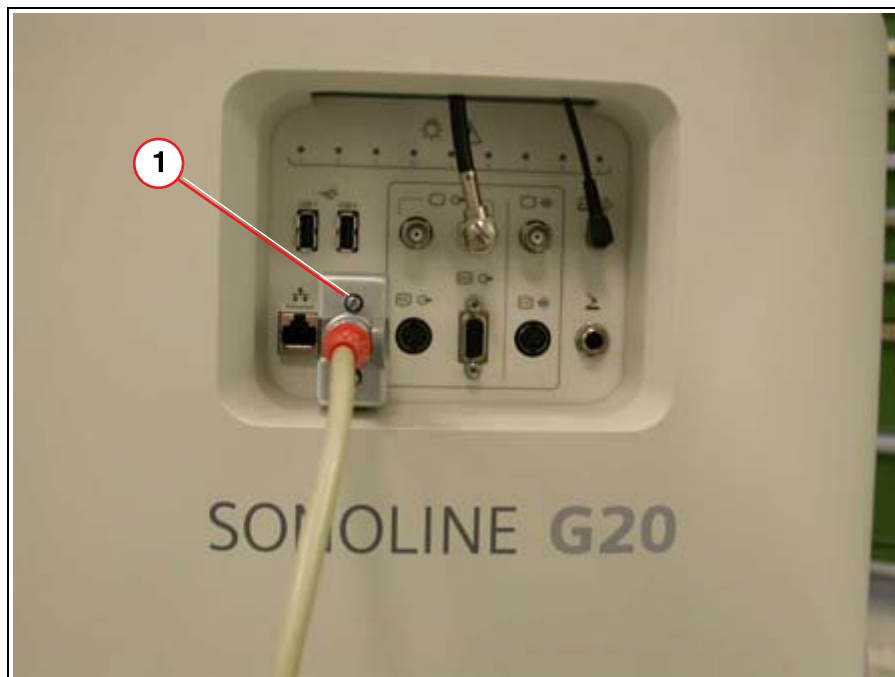


Fig. 39: SONOLINE G20

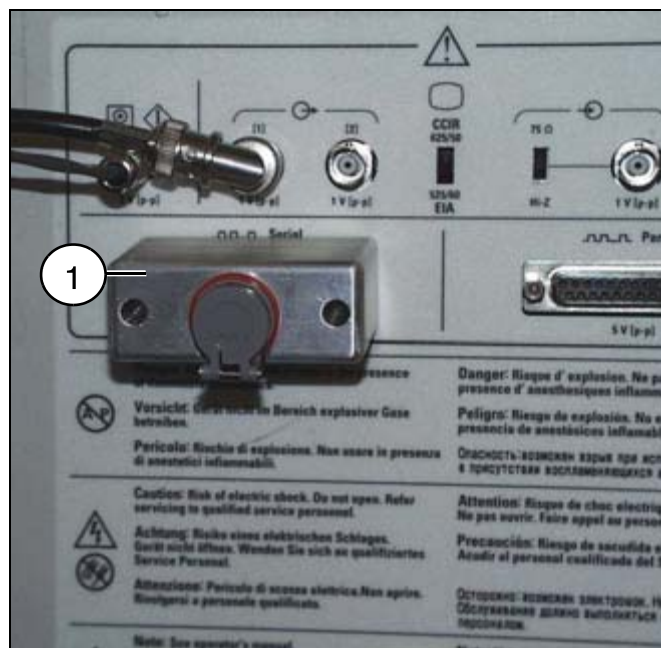


Fig. 40: SONOLINE Adara

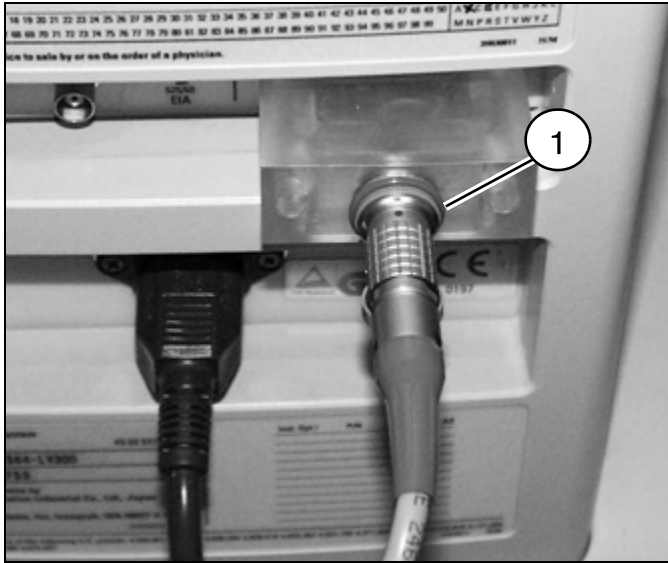


Fig. 41: SONOLINE Prima

SONOLINE G20

- Secure the connector adapter (1/Fig. 39 / p. 37) to the serial interface.
- Install software version V1.0.302 or higher in the SONOLINE G20 (see the SONOLINE G20 operating instructions, chapter 4).
- Enable ultrasound localization (see the “**Ultrasound localization**” chapter).

SONOLINE Adara

- Secure the connector adapter (1/Fig. 40 / p. 37) to the serial interface.
- Install software version 2.0.0 in the SONOLINE Adara (see the SONOLINE Adara operating instructions, chapters 7-19).
 - Only available with SONOLINE Adara:
Prior to installing the new software V.2.0.0, save the "presettings" and "quick sets" (see the SONOLINE Adara operating instructions, chapters 7-15....).
After software installation, reload the stored presets in the ultrasound system (see the SONOLINE Adara operating instructions, chapters 7-17).
- Enable ultrasound localization (chapter: “**Selecting the MODULARIS cross at the SONOLINE Adara**”).

SONOLINE Prima

- Install the connector adapter (1/Fig. 41 / p. 38).

- Install software version 2.8.0 in the SONOLINE Prima (see the SONOLINE Prima operating instructions, chapters 8-22).
 - Only available with SONOLINE Prima: Prior to installing the software V.2.8.0, save the "user presets" and "quick sets" (see the SONOLINE Prima operating instructions, chapters 8-16....).After software installation, reload the stored presets in the ultrasound system (see the SONOLINE Prima operating instructions.)
- Enable ultrasound localization (chapter: "**Selecting the MODULARIS cross at the SONOLINE Prima**").

Probes

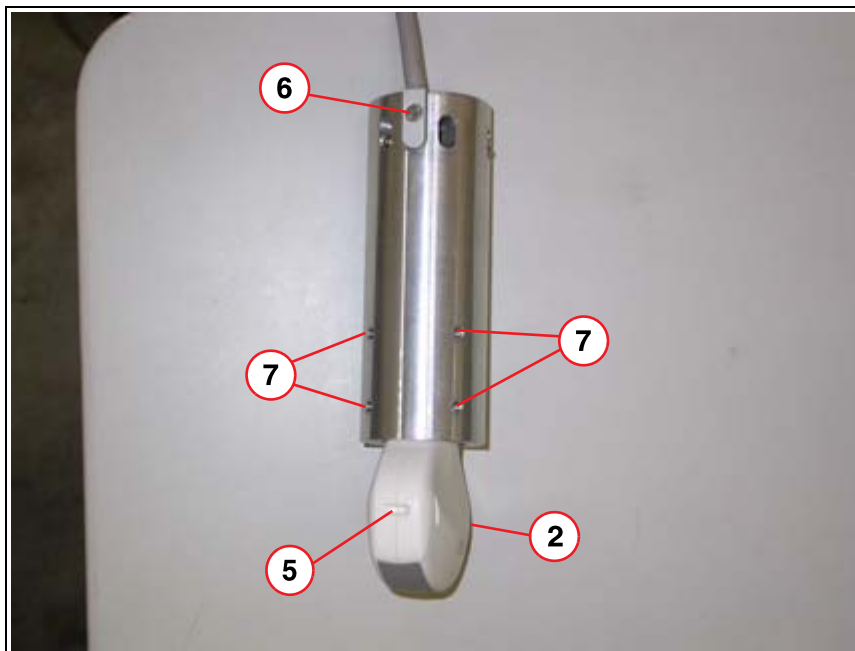


Fig. 42: Applicator_1

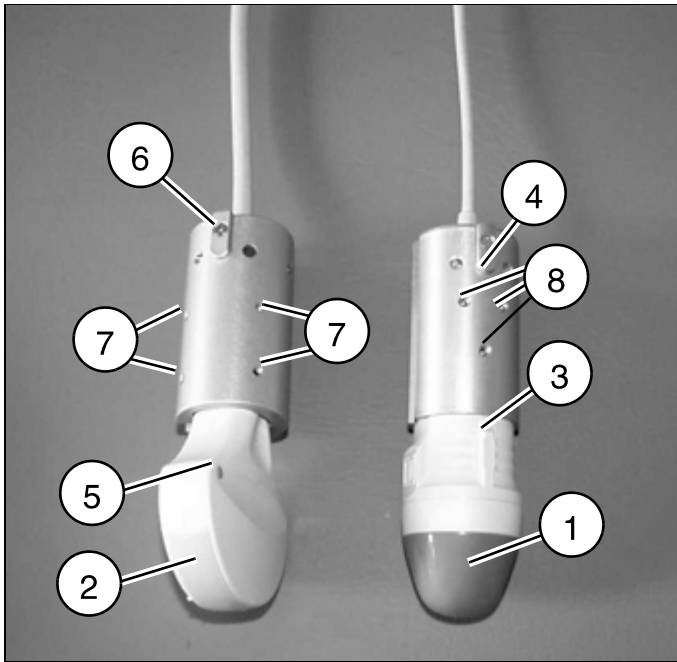


Fig. 43: Probe

Sector probe

- Loosen all grub screws so that they do not hinder insertion of the probe.
- Slide the sleeve onto the sector probe to the extent possible (1/Fig. 43 / p. 40). Ensure correct positioning, the mark (3/Fig. 43 / p. 40) and (4/Fig. 43 / p. 40) must be lined up.
- Tighten the 6 screws (3 not visible) (8/Fig. 43 / p. 40).
- Check the ultrasound isocenter (see the chapter: **"Isocenter with ultrasound"**).
Make adjustments depending on the ultrasound unit and according to these instructions.

Array probe

- Loosen all grub screws so that they do not hinder insertion of the probe.
- Slide the sleeve onto the array probe to the extent possible (2/Fig. 42 / p. 39) and (2/Fig. 43 / p. 40). Ensure correct positioning, the narrow side with the marking ((5/Fig. 42 / p. 39) and (5/Fig. 43 / p. 40)) must be lined up with the guide nub ((6/Fig. 42 / p. 39) and (6/Fig. 43 / p. 40)).
- Tighten the 8 grub screws (4 not visible) ((7/Fig. 43 / p. 40) and (7/Fig. 43 / p. 40)).
- Check the ultrasound isocenter (see the chapter: **"Isocenter with ultrasound"**).
Make adjustments depending on the ultrasound unit and according to these instructions.

Selecting the MODULARIS cross on the SONOLINE G20

Ultrasound localization

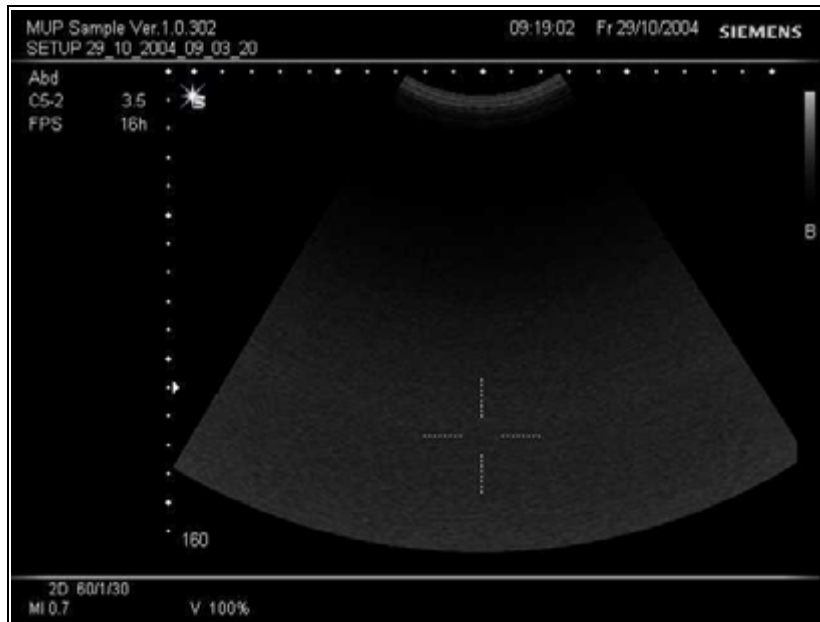


Fig. 44: G20 cross_01

- In the case of ultrasound localization, a mount is installed on the shock wave head in which an ultrasound probe can be attached.

Only the following probes can be used:

C5-2 Convex Array 3.5 MHz

- Press the “F6” key.
- Select MUP with the track ball.
- Press the  press
- Enter the password.
- Use the track ball to select “Litho mode no X-ray”.
- Select save via the track ball.
- Press the  key.
- Deselect the screensaver on the SONOLINE G20 (see SONOLINE G20 operating instructions).
- A cross is displayed when selecting a probe.

Selecting the MODULARIS cross on the SONOLINE Adara

Ultrasound localization

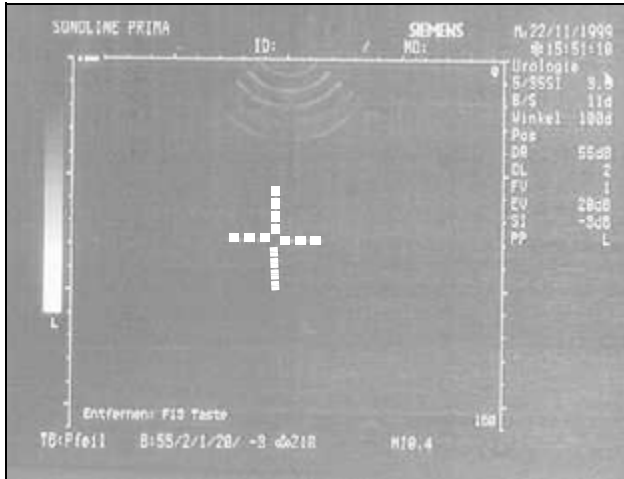


Fig. 45: MODULARIS cross 01

- In the case of ultrasound localization, a mount is installed on the shock wave head in which an ultrasound probe can be attached.

Only the following probes can be used:

3.5 C40S Convex Array 3.5 MHz
3.5/5.0 SI sector probe

- Press the “F4” key.
- Press the “5” key.
- Select MUP with the track ball.
- Press the  key.
- Enter the password.
- Use the track ball to select “Litho mode no X-ray”.
- Press the  key.
- Use the track ball to select “Litho mode no X-ray”.
- Press the  key.
- Press the  key twice.
- Deselect the screensaver on the SONOLINE Adara (see also the SONOLINE Adara operating instructions).
- A cross (Fig. 45 / p. 42) is displayed when selecting a probe.

Selecting the MODULARIS cross on the SONOLINE Prima

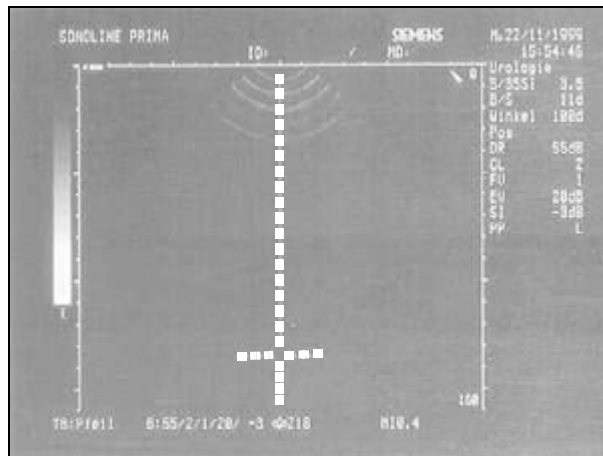


Fig. 46: MODULARIS cross 04

Ultrasound localization

In the case of ultrasound localization, a mount is installed on the shock wave head in which an ultrasound probe can be attached.

Only the following probes can be used:

3.5C40S Convex array 3.5 MHz

3.5/5.0 SI sector probe

- Press the “F4” key.
- Press the “5” key.
- Select MUP with the track ball.
- Press the  key.
- Enter the password.
- Use the track ball to select “Litho mode no X-ray”.
- Press the  key.
- Use the cursor track ball to select “Litho mode no X-ray”.
- Press the  key.
- Press the  key twice.
- Deselect the screensaver on the SONOLINE Adara (see also the SONOLINE Adara operating instructions).

- When selecting a probe,  or  the following cross [\(Fig. 46 / p. 43\)](#) is displayed.

Adhesive labels for ultrasound units

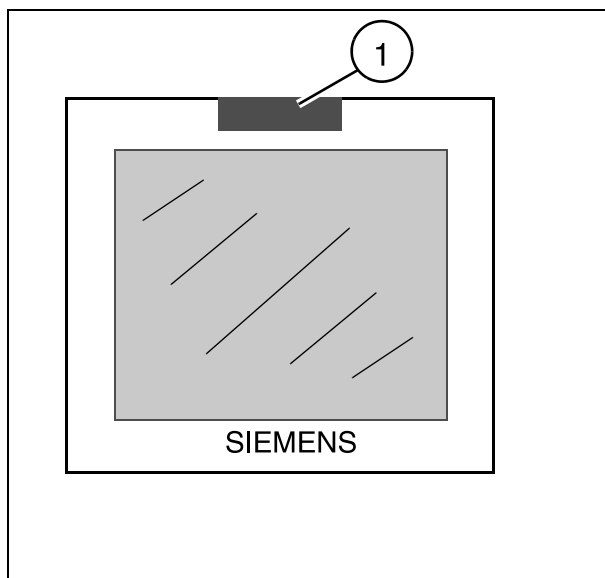


Fig. 47: Adhesive label

- Attach the "LITHOSTAR MODULARIS" label included in the shipment to the monitor of the ultrasound unit ([1/ Fig. 47 / p. 45](#)) (this label is used to identify which ultrasound unit is functioning with the LITHOSTAR MODULARIS).

MUT MODULARIS

The endoscopy trolley will be started up by the corresponding supplier.

Final work steps

See chapter [\(Final work steps / p. 84\)](#).

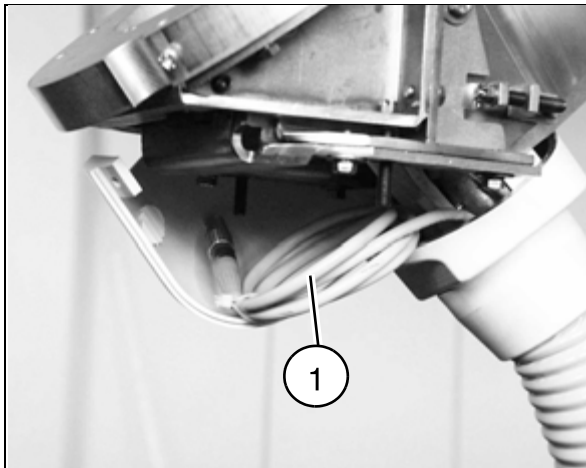


Fig. 48: Removing the cover panel

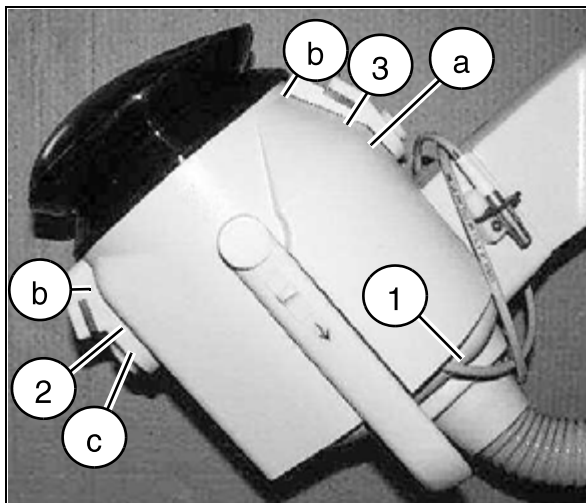


Fig. 49: Attachments 1

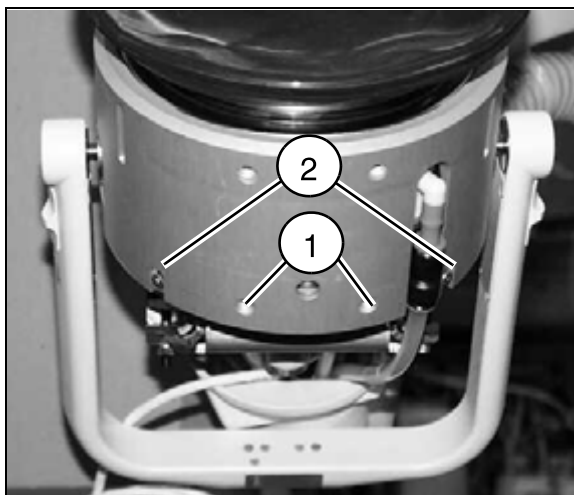


Fig. 50: Overview 1

- Remove the cover from the trolley.

- Remove each of the 4 cover panels of the installation openings for the parts (2/3/Fig. 49 / p. 48).
- Check whether the bottom installation openings for the part (3/Fig. 49 / p. 48) are accessible. If not, mark them on the cover panel.
- Remove the shock wave head and take out the cable (1/Fig. 48 / p. 48).
- Check that connector X28 is connected to board D3. If not, connect it. Pull the entire excess length of this cable to the shock wave head if not already done.
- If necessary, file open the installation opening on the cover panel for the part (3/Fig. 49 / p. 48).

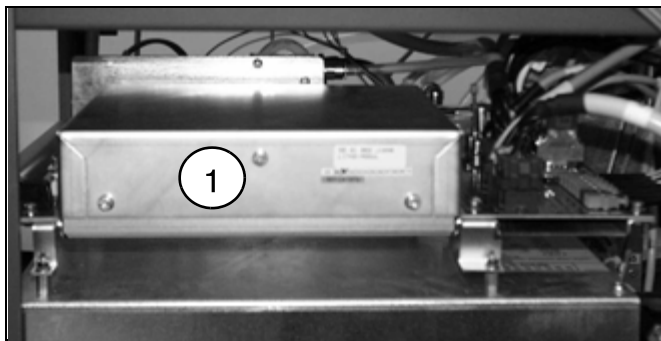


Fig. 51: Controller 1

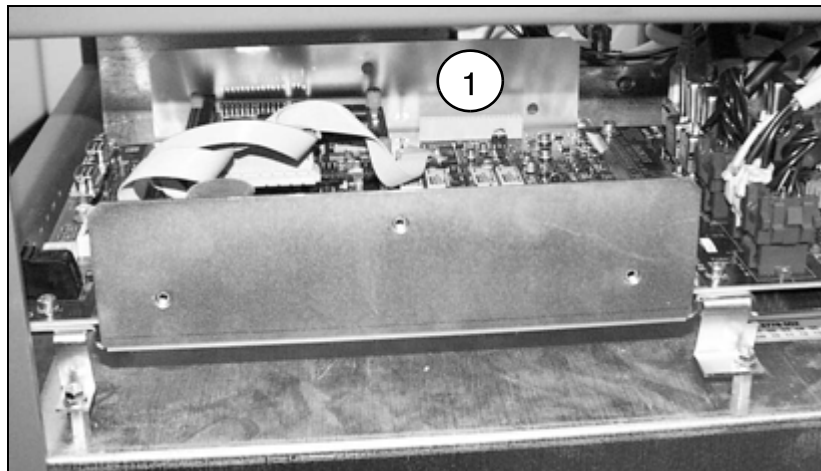


Fig. 52: Controller 2

- Reattach the cover panel and guide the cable (1/Fig. 49 / p. 48) out of it.

NOTE

In the case of newer installation parts, the sleeves are already connected to the installation parts.

- Secure the parts (2/3/Fig. 49 / p. 48) with the loose spacer sleeve.
Attachment:

- (a/Fig. 49 / p. 48): long sleeve, screw: M5 x 40 mm
- (b/Fig. 49 / p. 48): short sleeve, screw: M5 x 21 mm
- (c/Fig. 49 / p. 48): short sleeve, screw: M5 x 24 mm.
- Remove the controller cover (1/Fig. 51 / p. 49).
- The retaining pins are already mounted on the board (AS 03).
 - Place the additional MUP D3 board from the conversion kit in position (1/Fig. 52 / p. 49) and screw it in place.
- Before mounting the retaining pins on the board:
 - Remove all wires.
 - Remove the controller.
 - Remove the board from the mount.
 - Mount the retaining pins.
 - Screw the board to the mount again.
 - Place the additional MUP D3 board from the conversion kit in position (1/Fig. 52 / p. 49) and screw it in place.
 - Reinstall the controller.
 - Reconnect all cables.
- Reattach the controller cover (1/Fig. 51 / p. 49).

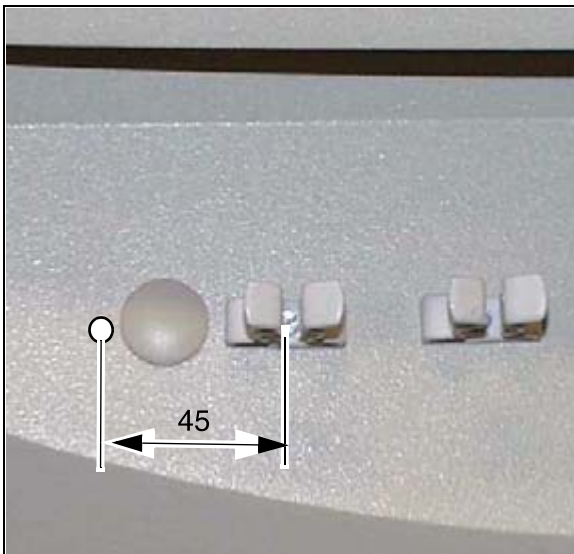


Fig. 53: Connector mount

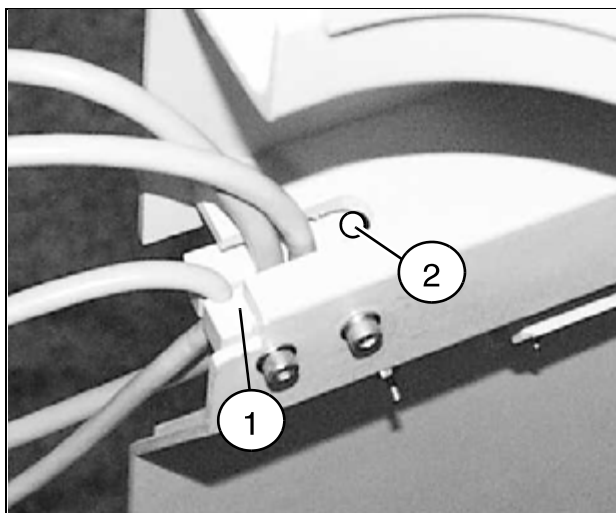


Fig. 54: Mount 1



Fig. 55: Mount 2

- Unscrew the mount (1/Fig. 54 / p. 51) (to facilitate installation of the cables at a later point, mark the length and position).
- If none of the three connector mounts (Fig. 53 / p. 50) is present yet, drill a 2.5 mm hole (see: (Fig. 53 / p. 50)). Mount the connector mount in the same way as the adjacent ones.
- Connect the cable from the conversion kit to the D3.X29 board in the MODULARIS Var-
io.
- Screw down the mount (1/Fig. 54 / p. 51) again with the three old cables and the new cable.

Cable mount on the support arm

- Use the screw included in the shipment instead of the cover panel screw to install the mount ([1/ Fig. 55 / p. 51](#)).

Cable holder on the cable

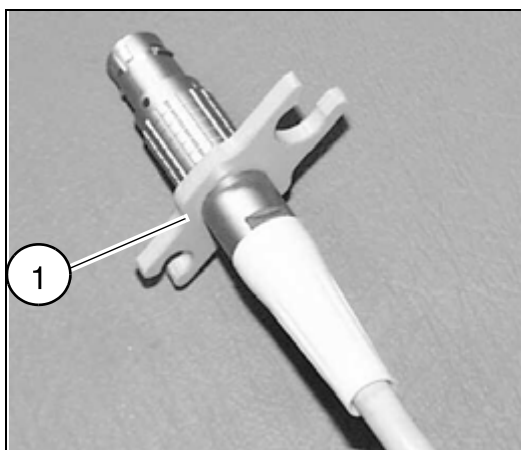


Fig. 56: Mount 3

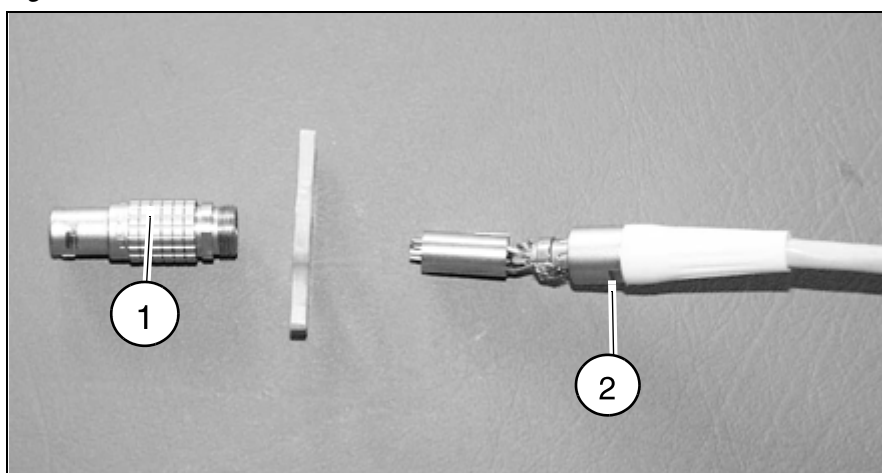


Fig. 57: Connector 1

- If the holder (1/Fig. 56 / p. 53) is not yet located on the cable for the ultrasound mount, proceed as follows:
 - Unscrew the connectors: Hold the part (1/Fig. 57 / p. 53) and turn part 2 (2/Fig. 57 / p. 53).
 - Slide the holder (1/Fig. 56 / p. 53) onto part 2 (the depression must point toward part 2).
 - Screw the connectors together again.

Ultrasound probes

- Prepare the sector probe/array probe according to this document.

Adhesive labels for ultrasound unit

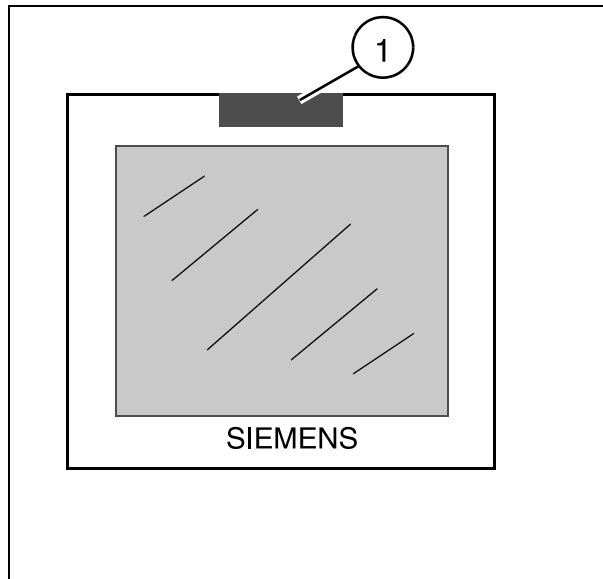


Fig. 58: Adhesive label

- Attach the "MODULARIS Vario" label included in the shipment to the monitor of the ultrasound unit ([1/ Fig. 58 / p. 55](#)) (this label is used to identify which ultrasound unit is functioning with the MODULARIS Vario).

Adjustment and start-up

- Switch on the system.
- Set the S2 switch on the D3 board to the service position.
- Connect the service PC and establish the connection (see the service instructions).
- Adjust the potentiometer in the ultrasound mount.

See Service Instructions, SPL1-130.061.01..

- Install the software for the ultrasound unit, according to unit type.
- Enable ultrasound localization ("Selecting the MODULARIS cross.....")



- .
- Check the isocenter with X-ray.
- Check the isocenter as described in this document.

LithoShare with several ultrasound units

Perform for each ultrasound unit.

SONOLINE G20

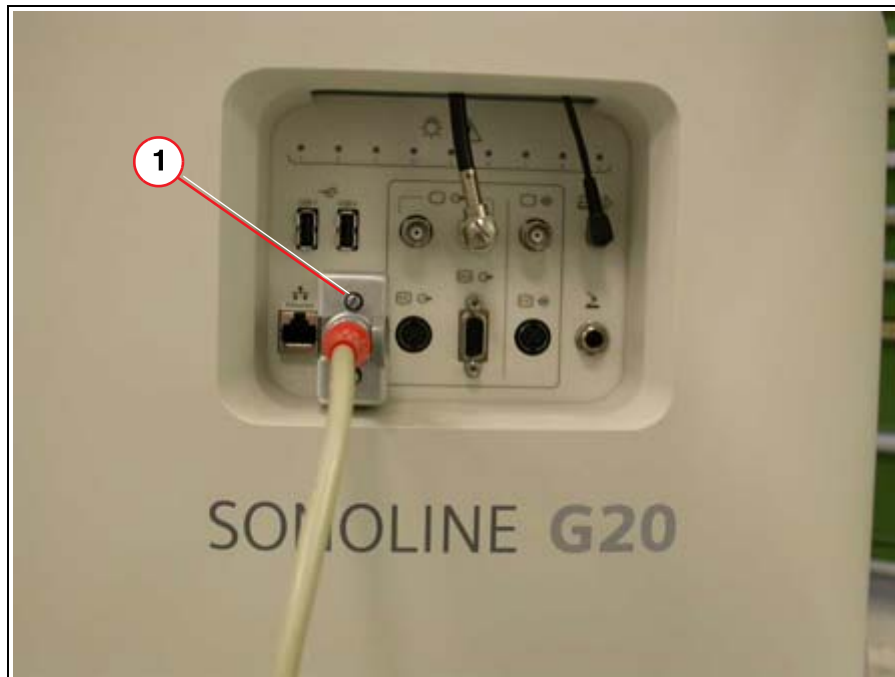


Fig. 59: SONOLINE G20

- Secure the connector adapter (1/Fig. 59 / p. 57) to the serial interface.
- Install software version V1.0.302 or higher in the SONOLINE G20 (see the SONOLINE G20 operating instructions, chapter 4).
- Enable ultrasound localization (chapter: “**Selecting the MODULARIS cross at the SONOLINE G20**”).

SONOLINE Adara

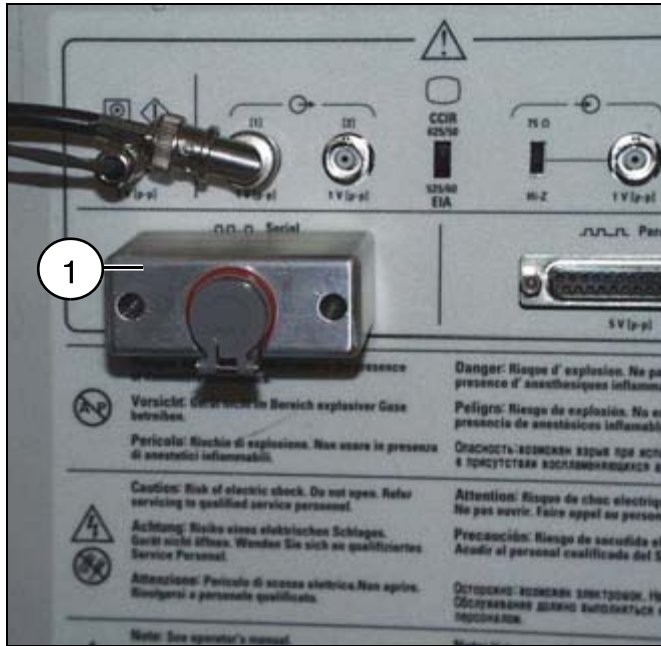


Fig. 60: SONOLINE Adara

- Secure the connector adapter (1/ Fig. 60 / p. 58) to the serial interface.
- Install software version 2.0.0 in the SONOLINE Adara (see the SONOLINE Adara operating instructions, chapters 7-19).
 - Only available with SONOLINE Adara:
 - Prior to installing the new software V.2.0.0, save the "presettings" and "quick sets" (see the SONOLINE Adara operating instructions, chapters 7-15....).
 - After software installation, reload the stored presets in the ultrasound system (see the SONOLINE Adara operating instructions, chapters 7-17).
- Enable ultrasound localization (chapter: **"Selecting the MODULARIS cross at the SONOLINE Adara"**).

SONOLINE Prima

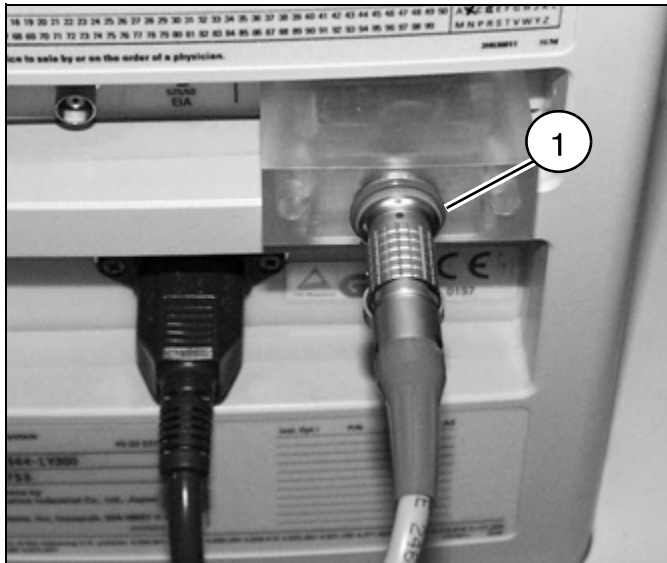


Fig. 61: SONOLINE Prima

- Install the connector adapter (1/Fig. 61 / p. 59).
- Install software version 2.8.0 in the SONOLINE Prima (see the SONOLINE Prima operating instructions, chapters 8-22).
 - Only available with SONOLINE Prima:
 Prior to installing the software V.2.8.0, save the "user presets" and "quick sets" (see the SONOLINE Prima operating instructions, chapters 8-16....).
 After software installation, reload the stored presets in the ultrasound system (see the SONOLINE Prima operating instructions.)
- Enable ultrasound localization (chapter: **"Selecting the MODULARIS cross at the SONOLINE Prima"**).
- Attach the "MODULARIS Vario" label included in the shipment to the monitor of the ultrasound unit (1/Fig. 58 / p. 55) (this label is used to identify which ultrasound unit is functioning with the MODULARIS Vario).
- Prepare the ultrasound probes.
- Check the isocenter as described in this document.

Preparations

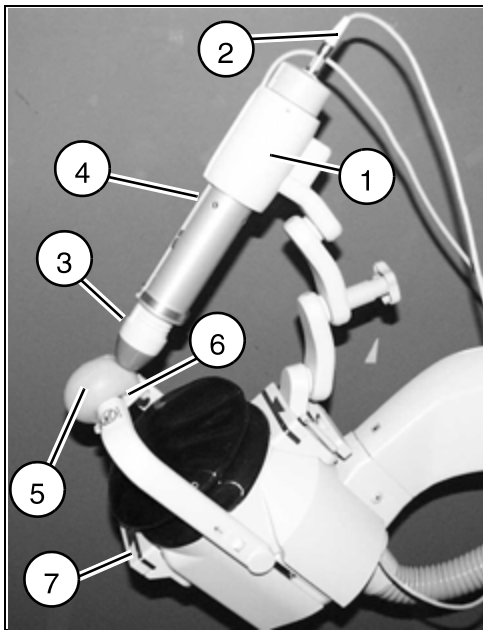


Fig. 62: View of unit

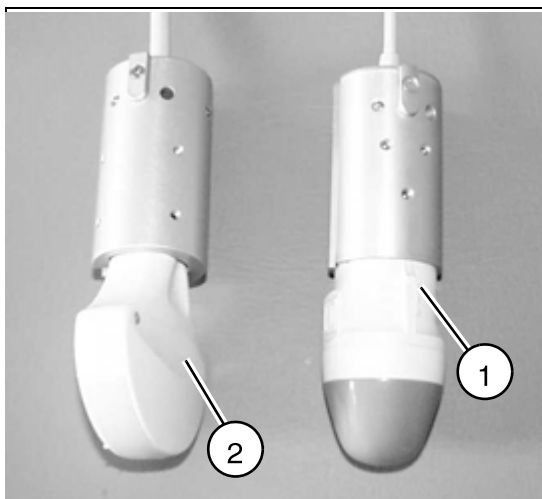


Fig. 63: Probe 01

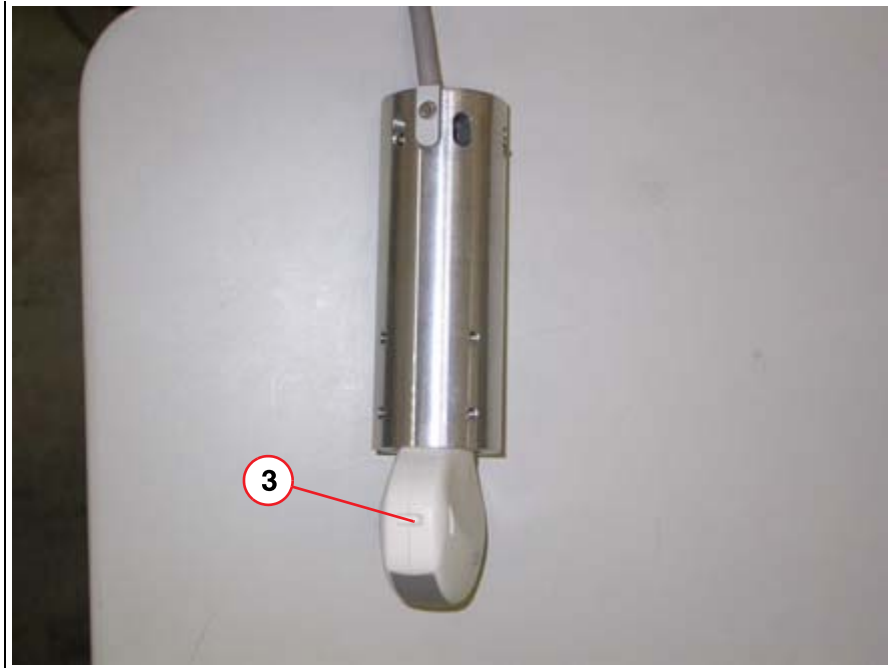


Fig. 64: Probe_2

NOTE

Only approved probes may be used for the corresponding SONO-LINE.

- Install the mount (1/Fig. 62 / p. 60) (see also operating instructions).
- Insert one of the ultrasound probes (sector probe (1/Fig. 63 / p. 60) or array probe ((2/Fig. 63 / p. 60) or (3/Fig. 64 / p. 61)) into the mount (3/Fig. 62 / p. 60). Carefully lay the cable for the probe in the long slot (4/Fig. 62 / p. 60).
- Plug in the cable (2/Fig. 62 / p. 60) and connect the probe to the ultrasound unit.
- Make the line connection (marked orange) between the MODULARIS Vario and the ultrasound unit.

Checking the target on the SONOLINE G20



Fig. 65: Target_Test_1



Fig. 66: Target_Test_2

NOTE

The isocenter must be checked with every probe type and after every replacement of a probe.

NOTE

The button designations can vary depending on the language version.

See the SONOLINE operating instructions for a comparison table.

- Use the "image field/zoom" knob to set the value (1/Fig. 66 / p. 62) to 180.
- Slide the ultrasound probe all the way forward to the shock wave head.
- Press the "Measurement" key and select the "Set" measurement marker.
- Use the track ball to move to the center of the crosshair. A value of $13 \text{ mm} \pm 1 \text{ mm}$ (2/Fig. 65 / p. 62) must appear in the display (2/Fig. 65 / p. 62) .
- Press the "Measurement" key ("Freeze" is deselected).
- Move the ultrasound probe all the way in the other direction.
- Press the "Measurement" key and select the "Set" measurement marker.
- Use the track ball to move to the center of the crosshair. A value of $151 \text{ mm} \pm 1 \text{ mm}$ must appear in the display (2/Fig. 66 / p. 62).

If this is not the case, the adjustment procedure must be repeated for the potentiometer in the ultrasound arm or the ultrasound arm must be replaced.

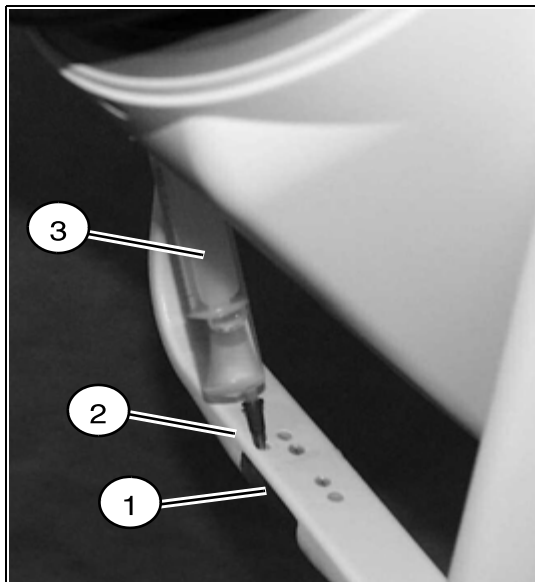


Fig. 67: Phantom 2

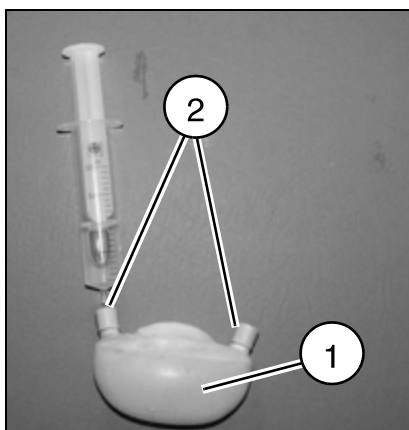


Fig. 68: Water bubble

Checking image tilt

NOTE

The isocenter must be checked with every probe type and after every replacement of a probe.

- Check whether the isocenter phantom (1/Fig. 67 / p. 63) is filled with water. If not, remove the screw (2/Fig. 67 / p. 63) and fill in water with a syringe (3/Fig. 67 / p. 63). There may not be any air bubbles. Screw in the screw again.
- Lift up the isocenter phantom.
- Fill the water bladder with water (approx. 100-120 ml, i.e. 5-6 syringes, each 20 ml) (1/Fig. 68 / p. 63):
 - Fill a syringe with distilled water. Remove any air that may be trapped in the syringe.
 - Insert the syringe needle through one of the valves (2/Fig. 68 / p. 63) and inject the contents of the syringe into the water bladder. The valve has a self-closing membrane.
 - Repeat the fill operation until the water bladder is filled with approx. 100-120 ml of water.
 - After filling, there may not be any air bubbles in the water bladder. Remove the air bubbles with the syringe.
- Spread contact gel on the isocenter phantom.
- Secure the water bladder (5/Fig. 62 / p. 60) to the isocenter phantom with the holder (6/Fig. 62 / p. 60).
- Apply coupling gel to the ultrasound probe.
- User the "Image field/zoom" knob to set the value "50" (Fig. 69 / p. 65) - bottom left of the ultrasound image.
- Move the probe forward (3/Fig. 62 / p. 60) until the isocenter crosshair is approx. in the center of the SONOLINE G20 screen.



Fig. 69: Basic settings_

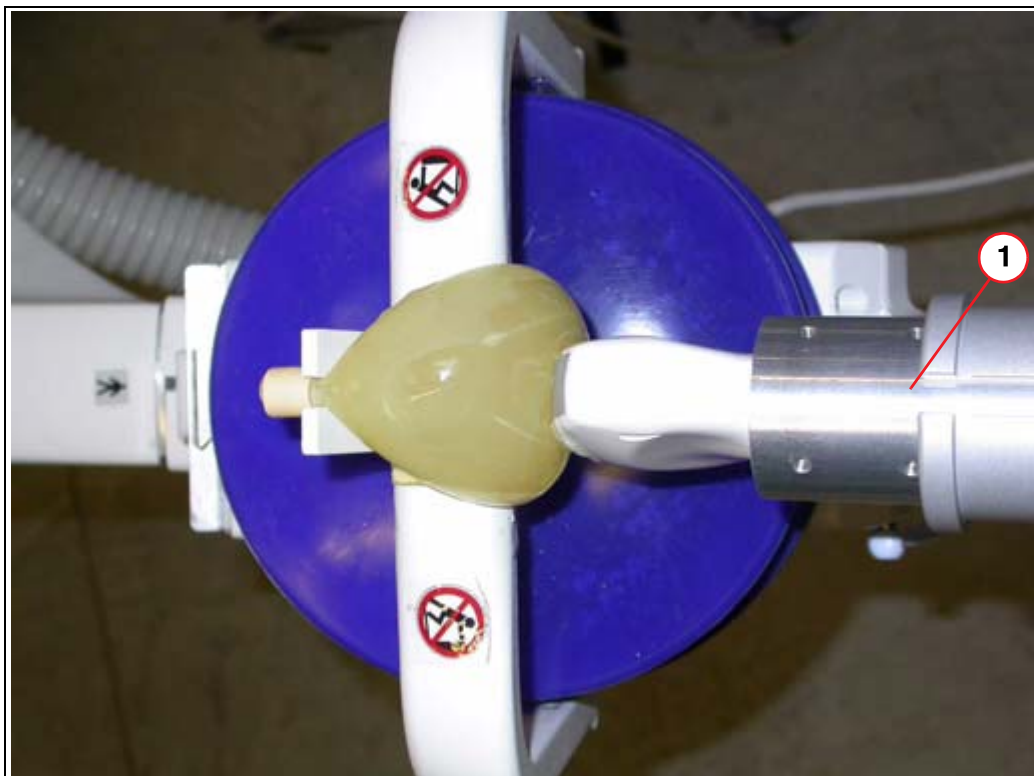


Fig. 70: Ultrasound arm_

- Activate the task menu and display it.
- Make the following basic settings at the ultrasound unit:

Value:	Adjust using:	German	English	French	Spanish
5 (Fig. 69 / p. 65)	Set track ball to edge (white background), then actuate  and set "Select" value via the controller.	FV	Edge	Côté	Contorno
35 dB (Fig. 69 / p. 65)	Set track ball to DR (white background), then actuate  and set "Select" value via the controller.	DR	Dyn Rng	DR	Cam Din

NOTE

Each activation of the "Set" key increases the value by +1. The "Select" controller allows the value to be changed in both directions.

- Set all slide controls all the way to the left.
- Press  Image reverse may not be selected.
- The corresponding ultrasound probe is selected during switch-on. If there is a second ultrasound probe, select the probe with the  key.
- Check whether the ultrasound arm is positioned as shown in (Fig. 62 / p. 60). If not, position it accordingly. The long slot must be visible (1/Fig. 70 / p. 65).

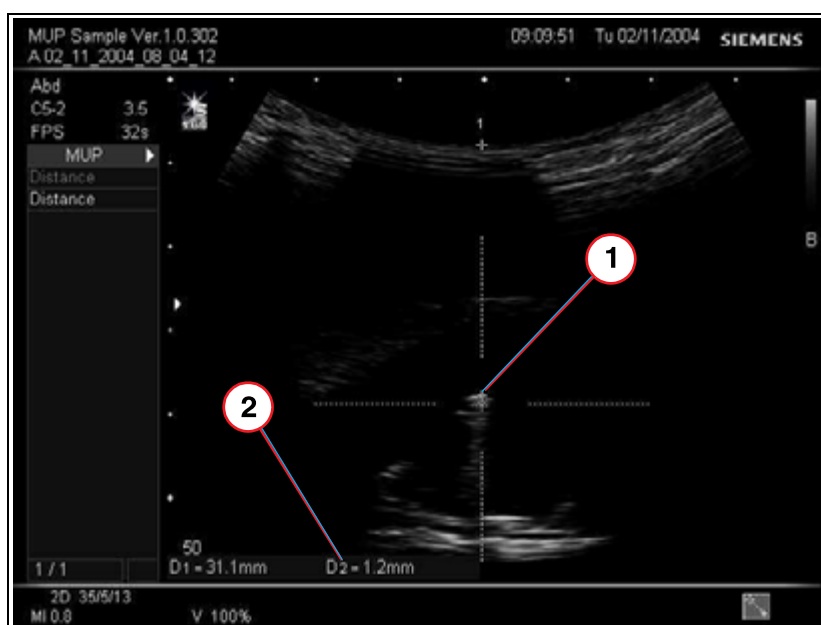
Checking the distance: Height

Fig. 71: Distance_height

- Press the “Measurement” key.
- Use the track ball to place the cross on the center of the target cross.
- Press the Measurement key.
- Move the track ball until the cross is in the center of the isocenter cross.
- Press the Measurement key.
- Use the track ball to move the “+2” cross to the longitudinal axis of the target line into the isocenter.
- Press  key.
the
- Move the cross using the track ball horizontally into the center of the white area of the isocenter phantom.
- The value displayed for “D2” must be between 1 and 5 mm. This is only valid for the default values, see instructions, SPL1-130.038.01... .
- Press  key.
the

Checking the distance: Page

- Press  key twice (“+1” cross is not necessary for this measurement).
the
- Use the track ball to move the “+2” cross to the longitudinal axis of the target line at the height of the isocenter.
- Press  key.
the
- Move the cross using the track ball horizontally into the center of the white area of the isocenter phantom.
- If the center point of the white area is not in the isocenter (permissible difference ± 0.5 mm from the center):
 - Make a note of the value of D2 (with mathematical sign):
If the display of the ball appears to the left of the isocenter, the correction value must have a negative sign (to the right it must have a positive sign).

- Press the F6 key.
- Use the track ball to select MUP.
- Press “Set” key.
the
- Press “5” key.
the
- Enter the password.
- Select OK via the track ball.
- Press the “Set” key.
- Use the track ball to select the value during image tilt and increase it via the “Set” key.

German:	Bildneigung Array	French:	Basculement d'image sondes conv.
English:	Image tilt array	Spanish:	Inclinar imagen transductor curvo

- Set half the value of D2.
Example : D2 = 1.2 mm $\Rightarrow$ Enter: -06 .
- Press  key.
the
- Check the deviation; if white area is not in the center of the isocenter, repeat the procedure.
- After the adjustment, secure the mount for the ultrasound probe on the mounting point (7/Fig. 62 / p. 60). For each probe, check whether the adjustment in this position is also OK. Do not make any change to the image tilt adjustment.
- Following the check, store the parts in the appropriate transport cases.

Checking the target on the Sonoline Adara

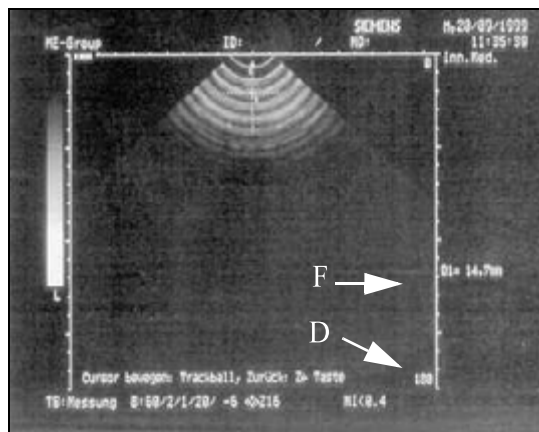


Fig. 72: Target test 1

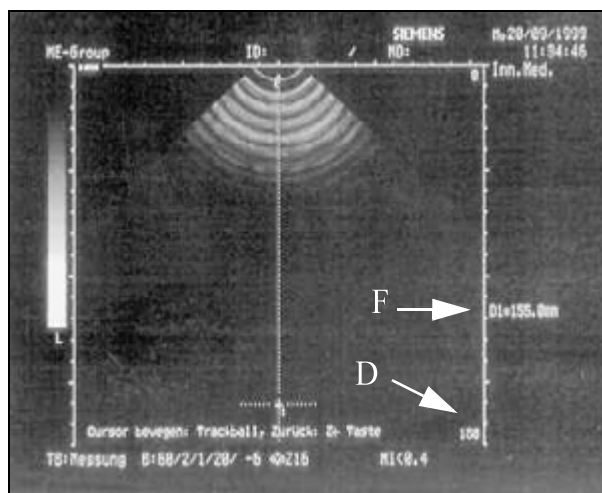


Fig. 73: Target test 2

NOTE

The isocenter must be checked for every probe type and after every replacement of a probe.

- Set the value (D/Fig. 72 / p. 69) via the knob  to 180.
- Press the  key and select the  measurement marker.
- Use the track ball to move to the center of the crosshairs. A value according to the table must appear in the display (F/Fig. 72 / p. 69) as a function of the probe.

Probe	Changeover with	Value for D1	
Page(1/Fig. 63 / p. 60)		15 ±1 mm	for default values, see SPL1-130.038.01..
Array (2/Fig. 63 / p. 60)		13 ±1 mm	

- Press the  key ("Freeze" is deselected).
- Move the ultrasound probe all the way in the other direction.
- Press the  key and select the  measurement marker.
- Use the track ball to move to the center of the crosshair. A value according to the table must appear in the display (F/Fig. 73 / p. 69) as a function of the probe.

If this is not the case, the adjustment procedure must be repeated for the potentiometer in the ultrasound arm or the ultrasound arm must be replaced.

Probe	Changeover with	Value for D1	
Page(1/Fig. 63 / p. 60)		153 ± 1 mm	for default values, see SPL1-130.038.01..
Array (2/Fig. 63 / p. 60)		151 ±1 mm	

- Press the  key ("Freeze" is deselected).

Checking image tilt

NOTE

The isocenter must be checked for every probe type and after every replacement of a probe.

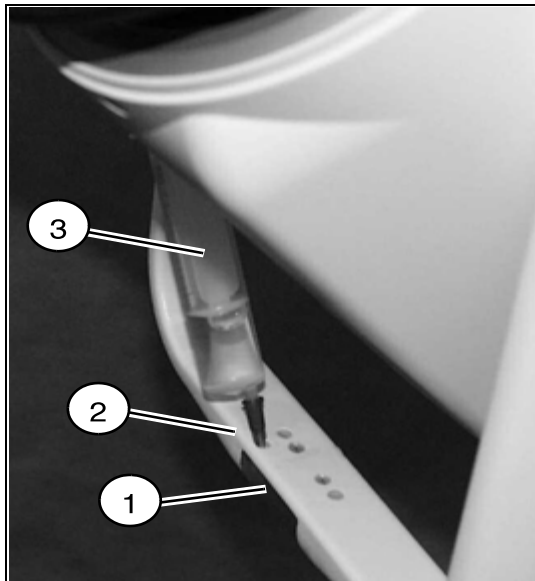


Fig. 74: Phantom 2

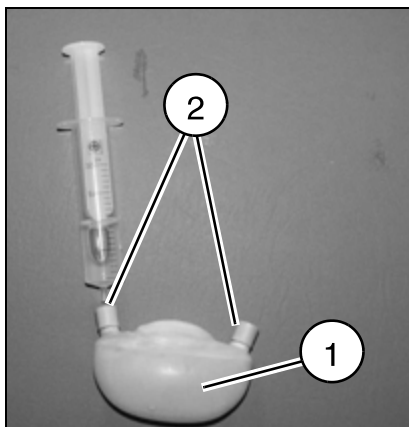


Fig. 75: Water bubble

- Check whether the isocenter phantom (1/Fig. 74 / p. 71) is filled with water. If not, remove the screw (2/Fig. 74 / p. 71) and fill in water with a syringe (3/Fig. 74 / p. 71). There may not be any air bubbles. Screw in the screw again.
- Lift up the isocenter phantom.
- Fill the water bladder with water (approx. 100-120 ml, i.e. 5-6 syringes, each 20 ml) (1/Fig. 75 / p. 71):
 - Fill a syringe with distilled water. Remove any air that may be trapped in the syringe.
 - Insert the syringe needle through one of the valves (2/Fig. 75 / p. 71) and inject the contents of the syringe into the water bladder. The valve has a self-closing membrane.
 - Repeat the fill operation until the water bladder is filled with approx. 100-120 ml of water.
 - After filling, there may not be air bubbles in the water bladder. Remove any air bubbles with the syringe.

- Spread contact gel on the isocenter phantom.
- Secure the water bladder (5/Fig. 62 / p. 60) to the isocenter phantom with the holder (6/Fig. 62 / p. 60).
- Apply coupling gel to the ultrasound probe.
- Use the knob  the value "60" (D/Fig. 69 / p. 65).
to set
- Move the probe forward (3/Fig. 62 / p. 60) until the isocenter crosshair is approx. in the center of the SONOLINE Prima screen.

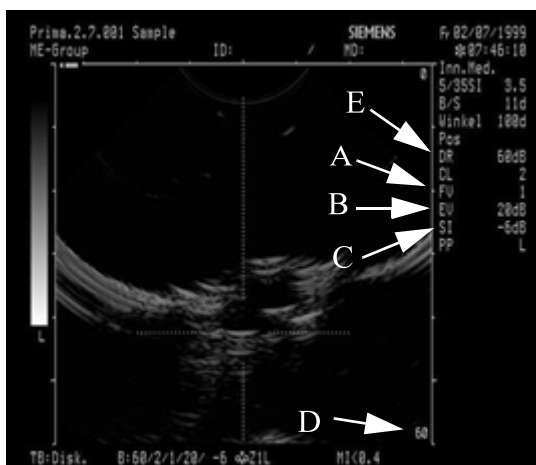


Fig. 76: Basic settings

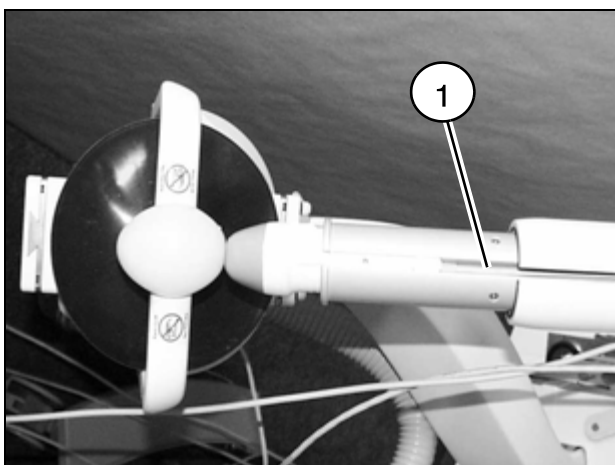
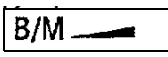


Fig. 77: Ultrasound arm

- Make the following basic settings at the ultrasound unit:

Value:	Adjust using:	German	English	French	Spanish
- 6 dB (C/Fig. 76 / p. 72)	Knob 	SI	Output	Sortie	Salida
20 dB (B/Fig. 76 / p. 72)		EV	Gain	Gain	Ampl
3 (A/Fig. 76 / p. 72)	Set the track ball to FV (highlighted in white), and then press  .	FV	Edge	Côté	Contorno
60 (D/Fig. 76 / p. 72)	Knob 	-----	-----	-----	-----
60 dB (E/Fig. 76 / p. 72)	Knob 	DR	Dyn Rng	DR	Cam Din

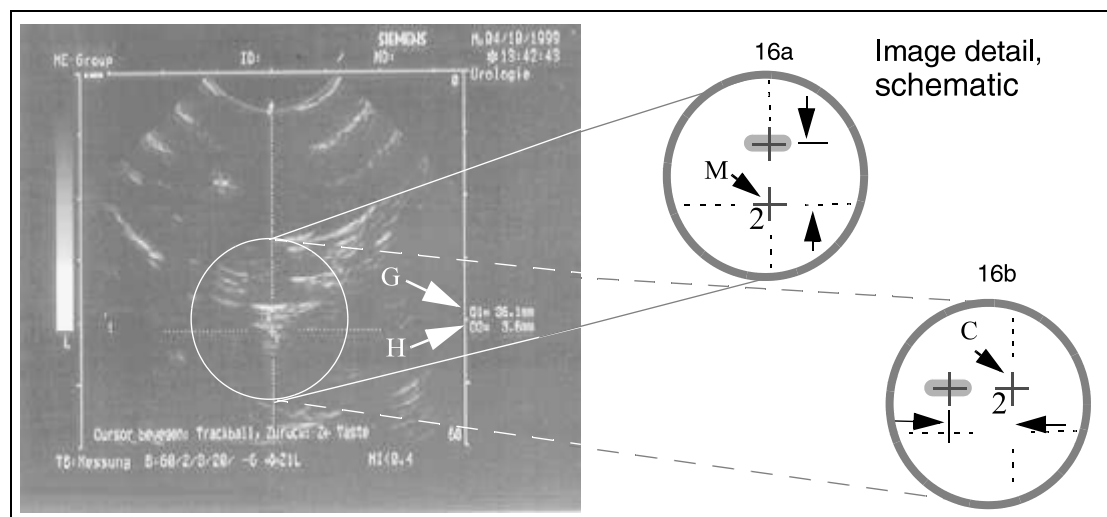


Fig. 78: Checks_02

- Set the slide controls all the way to the left.
- Press  Image reverse may not be selected.
- Select the appropriate ultrasound probe:

Sector probe 	Array probe 
--	---

- Check whether the ultrasound arm is positioned as shown in (Fig. 77 / p. 72). If not, position it accordingly. The long slot must be visible (1/ Fig. 77 / p. 72).

Checking the distance: Height (16a/ Fig. 78 / p. 73)

- Press  key.
the
- Move the track ball until the “+1” cross is in the center of the isocenter cross.
- The value displayed for “D1” (G/ Fig. 78 / p. 73) must be between 33 and 36 mm; if not, move the probe appropriately in the longitudinal axis.
- Press  key.
the
- Use the track ball to move the “+2” cross to the longitudinal axis of the target line into the isocenter (M/ 16a/ Fig. 78 / p. 73).
- Press the  key.
- Move the “+2” cross using the track ball horizontally into the center of the white area (16a/ Fig. 78 / p. 73) of the isocenter phantom.
- The value displayed for “D2” (H/ Fig. 78 / p. 73) must be between 1 and 5 mm. This is only valid for the default values, see instructions, SPL1-130.038.01... .
- Press  key.
the

Checking the distance: Page (16b/ Fig. 78 / p. 73)

- Press  key twice (“+1” cross is not necessary for this measurement).
the
- Move the “+2” cross using the track ball onto the horizontal axis of the target line (C/ Fig. 78 / p. 73).
- Press  key.
the

- Move the "+2" cross using the track ball horizontally into the center of the white area of the isocenter phantom.
- If the center point of the white area (16b/Fig. 78 / p. 73) is not in the isocenter (permissible difference ± 0.5 mm from the center):

- Make a note of the value of D2 (with mathematical sign):
If the display of the ball (16b/Fig. 78 / p. 73) appears to the left of the isocenter, the correction value must have a negative sign (to the right it must have a positive sign).
- Press  key.
the
- Press the "F4" key.
- Press the "5" key.
- Select "MUP" with the track ball.
- Press  key.
the
- Enter the password.
- Use the track ball to select the appropriate probe during image tilt.

German:	Bildkippung Sektor Bildkippung Array	French:	Basculement d'image sondes sect. Basculement d'image sondes conv.
English:	Image Tilt Sector Image Tilt Array	Spanish:	Incl. imagen transd. sect meca- nico Inclinar imagen transductor curvo

- Press  key.
the
- Set half the value of D2 (H/Fig. 78 / p. 73).
Example (H/Fig. 78 / p. 73) D2 = 1.2 mm $\Rightarrow$ Enter: -06
- Press  key.
the
- Press  key twice.
the
- Check the deviation; if the white area (16b/Fig. 78 / p. 73) is not in the center of the isocenter, repeat the procedure.

- Press  key.
the
- After the adjustment, secure the mount for the ultrasound probe on the mounting point (7/Fig. 62 / p. 60). For each probe, check whether the adjustment in this position is also OK. Do not make any change to the image tilt adjustment.
- Following the check, store the parts in the appropriate transport cases.

Checking the target on the Sonoline Prima

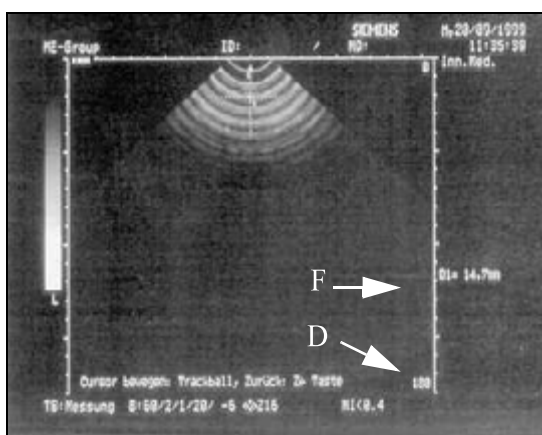


Fig. 79: Target test 1

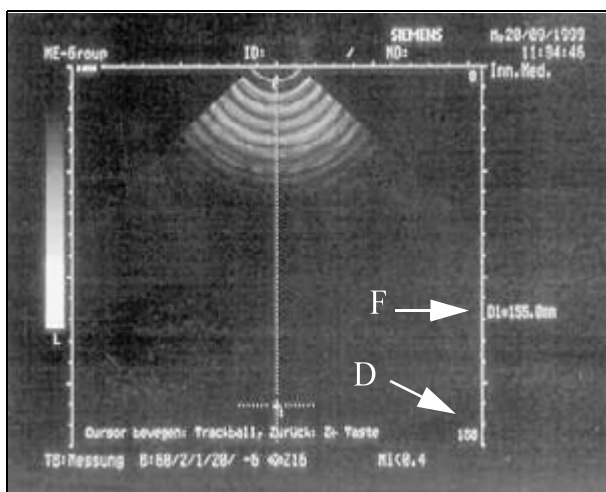


Fig. 80: Target test 2

NOTE

The isocenter must be checked for every probe type and after every replacement of a probe.

- Set the value (D/Fig. 79 / p. 76) via the knob  to 180.

- Slide the ultrasound probe all the way forward to the shock wave head.
- Press the  key and select the  measurement marker.
- Use the track ball to move to the center of the crosshair. A value of D1 according to the table must appear in the display (F/Fig. 79 / p. 76) as a function of the probe.

Probe	Select using	Value for D1	
Page (1/Fig. 63 / p. 60)		15 ±1 mm	for default values, see SPL1-130.038.01..
Array (2/Fig. 63 / p. 60)		13 ±1 mm	

- Press the  key ("Freeze" is deselected).
- Move the ultrasound probe all the way in the other direction.
- Press the  key and select the  measurement marker.
- Use the track ball to move to the center of the crosshair. A value of D1 according to the table must appear in the display (F/Fig. 80 / p. 76) as a function of the probe. If this is not the case, the adjustment procedure must be repeated for the potentiometer in the ultrasound arm or the ultrasound arm must be replaced.

Probe	Select using	Value for D1	
Page (1/Fig. 63 / p. 60)		153 ±1 mm	for default values, see SPL1-130.038.01..
Array (2/Fig. 63 / p. 60)		151 ±1 mm	

- Press the  key ("Freeze" is deselected).

Checking image tilt

NOTE

The isocenter must be checked for every probe type and after every replacement of a probe.

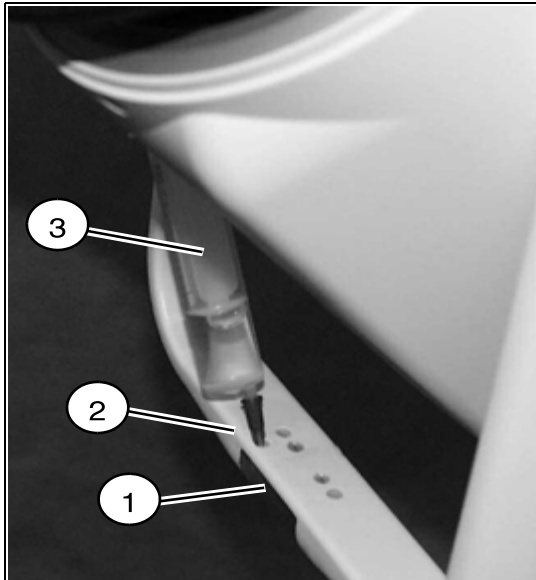


Fig. 81: Phantom 2

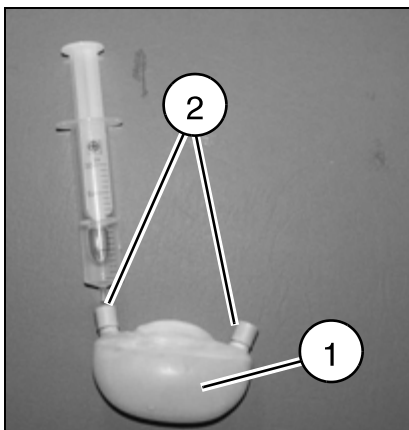


Fig. 82: Water bubble

- Check whether the isocenter phantom (1/Fig. 81 / p. 78) is filled with water. If not, remove the screw (2/Fig. 81 / p. 78) and fill in water with a syringe (3/Fig. 81 / p. 78).
There may not be any air bubbles. Screw in the screw again.
- Lift up the isocenter phantom.
- Fill the water bladder with water (approx. 100-120 ml, i.e. 5-6 syringes, each 20 ml) (1/Fig. 82 / p. 78):
 - Fill a syringe with distilled water. Remove any air that may be trapped in the syringe.

- Insert the syringe needle through one of the valves (2/Fig. 82 / p. 78) and inject the contents of the syringe into the water bladder. The valve has a self-closing membrane.
- Repeat the fill operation until the water bladder is filled with approx. 100-120 ml of water.
- After filling, there may not be air bubbles in the water bladder. Remove any air bubbles with the syringe.
- Spread contact gel on the isocenter phantom.
- Secure the water bladder (5/Fig. 62 / p. 60) to the isocenter phantom with the holder (6/Fig. 62 / p. 60).
- Apply coupling gel to the ultrasound probe.
- Use the knob  to set the value "60" (D/Fig. 83 / p. 79).
- Move the probe forward (3/Fig. 62 / p. 60) until the isocenter crosshair is approx. in the center of the SONOLINE Prima screen.

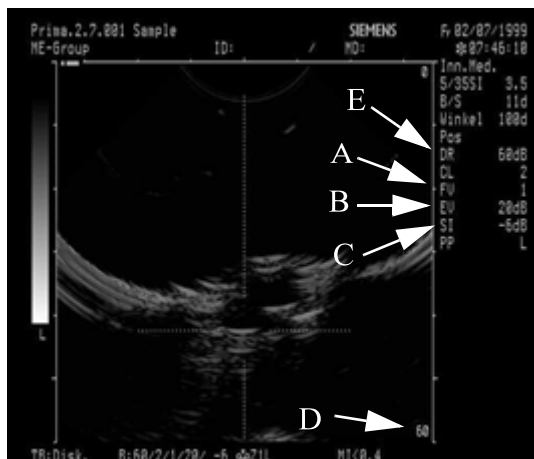


Fig. 83: Basic settings

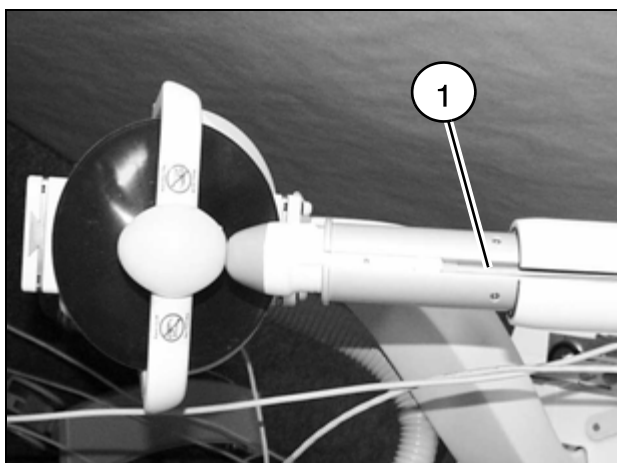
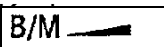


Fig. 84: Ultrasound arm

- Make the following basic settings at the ultrasound unit:

Value:	Adjust using:	German	English	French	Spanish
- 6 dB (C/Fig. 83 / p. 79)	Knob 	SI	Output	Sortie	Salida
20 dB (B/Fig. 83 / p. 79)		EV	Gain	Gain	Ampl
3 (A/Fig. 83 / p. 79)	Set the track ball to FV (highlighted in white), and then press  .	FV	Edge	Côté	Contorno
60 (D/Fig. 83 / p. 79)	Knob 	-----	-----	-----	-----
60 dB (E/Fig. 83 / p. 79)	Knob 	DR	Dyn Rng	DR	Cam Din

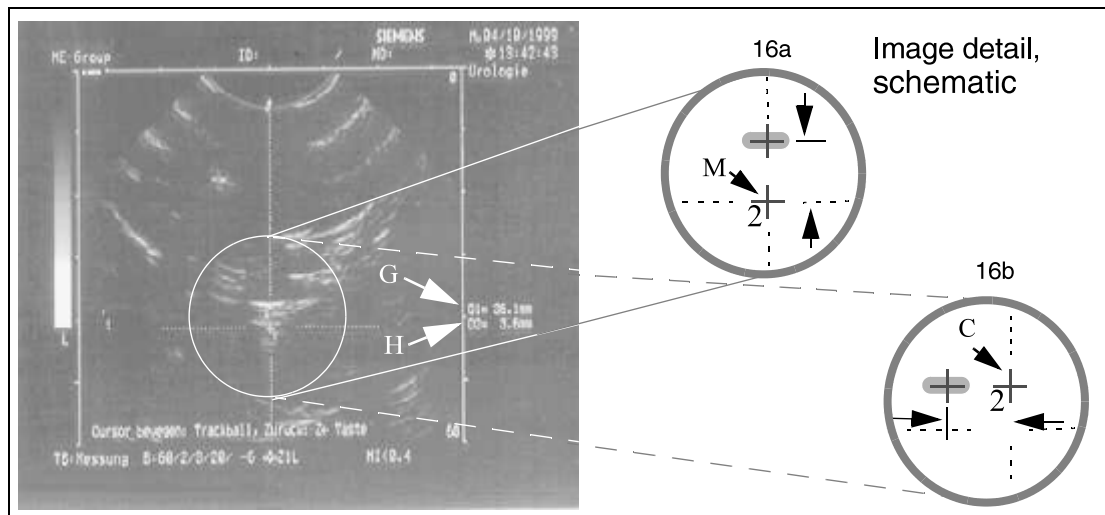


Fig. 85: Checks_02

- Set the slide controls all the way to the left.
- Press  Image reverse may not be selected.
- Select the appropriate ultrasound probe:

Sector probe 	Array probe 
--	---

- Check whether the ultrasound arm is positioned as shown in (Fig. 84 / p. 80). If not, position it accordingly. The long slot must be visible (1/ Fig. 84 / p. 80).

Checking the distance: Height (16a/ Fig. 85 / p. 81)

- Press  key.
the
- Move the track ball until the “+1” cross is in the center of the isocenter cross.
- The value displayed for “D1” (G/ Fig. 85 / p. 81) must be between 33 and 36 mm; if not, move the probe appropriately in the longitudinal axis.
- Press  key.
the
- Use the track ball to move the “+2” cross to the longitudinal axis of the target line into the isocenter (16a/ Fig. 85 / p. 81).
- Press the  key.

- Move the "+2" cross using the track ball horizontally into the center of the white area (16a/Fig. 85 / p. 81) of the isocenter phantom.
- The value displayed for "D2" (H/Fig. 85 / p. 81) must be between 1 and 5 mm. This is only valid for the default values, see instructions SPL1-130.038.01... .

- Press  key.
the

Checking the distance: Page (16a/Fig. 85 / p. 81)

- Press  key twice (" +1 " cross is not necessary for this measurement).
the
- Move the "+2" cross using the track ball onto the horizontal axis of the target line (C/Fig. 85 / p. 81).
- Press  key.
the
- Move the "+2" cross using the track ball horizontally into the center of the white area of the isocenter phantom.
- If the center point of the white area (16b/Fig. 85 / p. 81) is not in the isocenter (permissible difference ± 0.5 mm from the center):
 - Make a note of the value of D2 (with mathematical sign):
If the display of the ball (16b/Fig. 85 / p. 81) appears to the left of the isocenter, the correction value must have a negative sign (to the right it must have a positive sign).
 - Press  key.
the
 - Press the "F4" key.
 - Press the "5" key.
 - Select "MUP" with the track ball.
 - Press  key.
the
 - Enter the password.
 - Use the track ball to select the appropriate probe during image tilt.

German:	Bildkippung Sektor Bildkippung Array	French:	Basculement d'image sondes sect. Basculement d'image sondes conv.
English:	Image Tilt Sector Image Tilt Array	Spanish:	Incl. imagen transd. sect meca- nico Inclinar imagen transductor curvo

- Press  key.
the
 - Set half the value of D2 (H/Fig. 85 / p. 81).
Example (H/Fig. 85 / p. 81) D2 = 1.2 mm ⇒ Enter: -06
 - Press  key.
the
 - Press  key twice.
the
 - Check the deviation; if the white area (16b/Fig. 85 / p. 81) is not in the center of the isocenter, repeat the procedure.
-
- Press  key.
the
 - After the adjustment, secure the mount for the ultrasound probe on the mounting point (7/Fig. 62 / p. 60). For each probe, check whether the adjustment in this position is also OK. Do not make any change to the image tilt adjustment.
 - Following the check, store the parts in the appropriate transport cases.

Customer and country-specific settings

Setting the system clock (if necessary)

- MODULARIS Vario on.
- Set the service switch in M13/D3/S2 to position 2 (service on).
- Select "service" on the control panel and then "set clock".
- Select the corresponding item and change the setting.
- Set the service switch in M13/D3/S2 to position 1 (service off).

Setting the user language (if necessary)

- Set the service switch in M13/D3/S2 to position 2 (service on).
- Select "Service" on the control panel, then "System data", and then "Language".
- Using button S5/S6, select the required language and then activate S2 (back).
- Set the service switch in M13/D3/S2 to position 1 (service off).

Backup and error memory

- When the start-up is complete, perform a backup and then erase the error memory (e:show error log) (see Service Instructions).
- Delete the therapy data (t:show therapy data).

Remaining work

- Connect and secure the protective conductors to all the covers.
- Measure the protective conductor resistance.

Measurement device: Protective conductor meter

Measured value: **max. 0.2 ohms** (Ensure compliance with country-specific regulations.)

(Current 10 A, voltage drop max. 2 V)

Measurement procedure: Measure between all accessible, conductive parts of the system and the protective conductor rail in the generator.

Conditions: **Protective conductor resistance max. 0.2 ohms**

- Reduce the contact resistance (e.g. tighten the screws)
 - If necessary, increase the diameter of the protective conductor.
- Cleaning the MODULARIS Vario:
For information on cleaning the system, refer to the chapter on "Cleaning/Disinfecting" in the operating instructions.
 - The manufacturer of this product requires information and the legislator demands proofs that a product delivered free of defects from the factory continues to possess the required and certified quality properties on installation and start-up. It is therefore absolutely necessary that the installation report with the installation and start-up data is sent without delay after completion of the work to the address stated on the installation report. The report is available in the system binder.
 - File the fax for the release for operation in the system binder. If the C-arm unit is not from Siemens, include the dimension protocol from the PG.

NOTICE

Fill out the protocols.

- ⇒ **After completing all adjustments and measurements, the responsible service engineer should confirm that all the values have been correctly measured and recorded in the measurement protocols by signing his name and the date (system, generator and IQ measurement protocol).**

Chapter 7 (Final Work Steps):	• Remaining work - Reference to the installation report added
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